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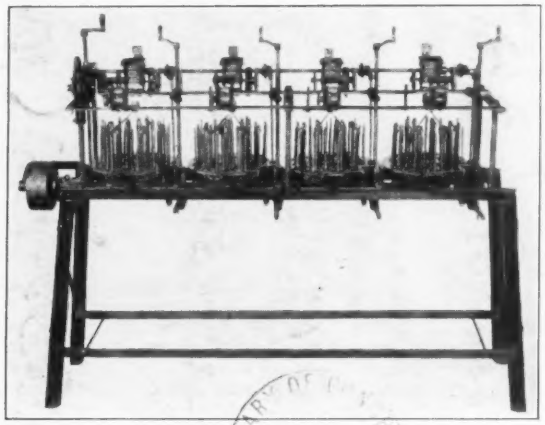

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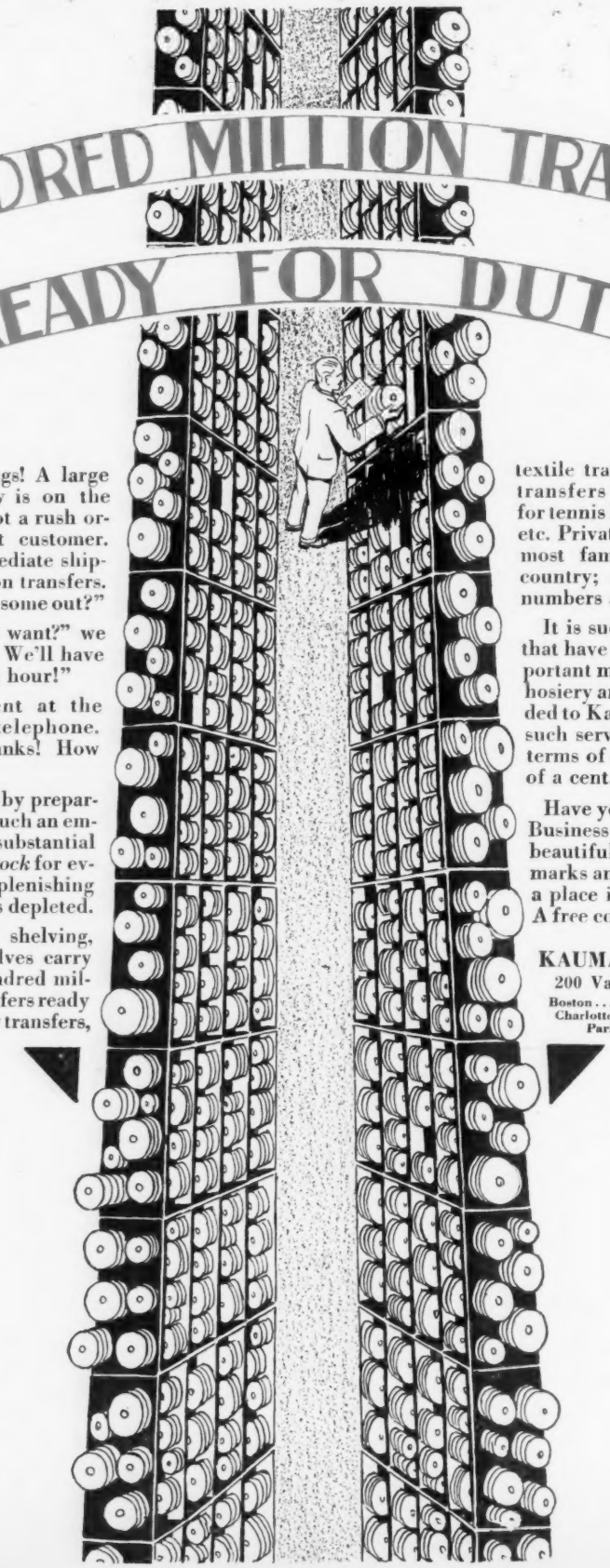

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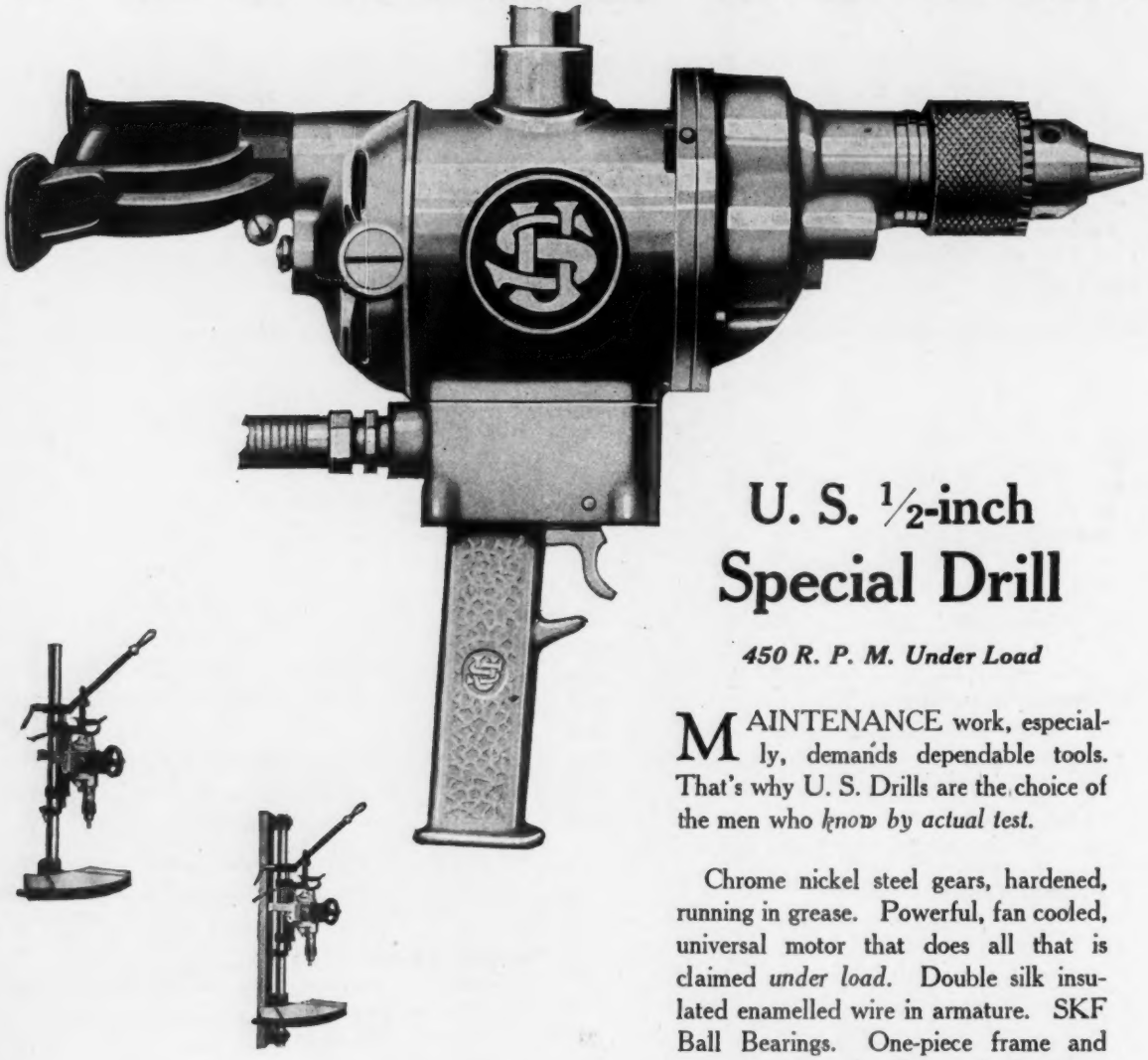

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TEXAS as a COTTON MANUFACTURER

A Brief Study of Present Conditions and Some Thoughts on the Future

By ROBERT W. PHILIP

TEXAS—the word conveys thoughts of wide, open spaces, the "wild and wooly" West, and vast plains and farming lands. Specifically, the textile man considers it as the largest producer of his raw material—a position which, due to its expanse and adaptability, the state holds with pre-eminence.

To present Texas from an industrial viewpoint, with particular reference to textile manufacture, by showing the progress made thus far and discussing the potentialities awaiting proper utilization, is the purpose of this brief article.

In explanation of thus selecting for consideration of this kind a state far removed, geographically, from the more centralized areas of the textile-manufacturing Southeast, it is expressly stated that this is done with no idea of contrasting it with nor overlooking those sections. For several years the writer has been making regular visits to Texas, in connection with textile manufacturing there, and finds in the southeastern and New England sections a general lack of definite information as to present conditions out there, from a cotton manufacturing standpoint. Many inquiriers seem to feel that due to its geographical separation from the remainder of the southern textile manufacturing area, it is likewise removed from the expansion of the industry in the South; others consider it, naturally, as an agricultural rather than an industrial territory.

It is in general response to such inquiries, and with the effort to depict Texas and its surrounding territory as a truly integral part of the southern and southwestern industrial development, that this survey of cotton manufacturing at present, and its possibilities for the future, is presented.

Texas has and will continue to possess pre-eminence in many respects agriculturally. But, as has been pointed out in several recent articles in some of the general magazines, the Texan has come to realize the value, the necessity, of "diluting agriculture with industry." Along with this newer conception have resulted tremendous strides in the way of developing necessary factors such as power facilities, transportation equipment, development of markets, a supply of capital. Nature has contributed an increased population to supply the needs for industrial labor.

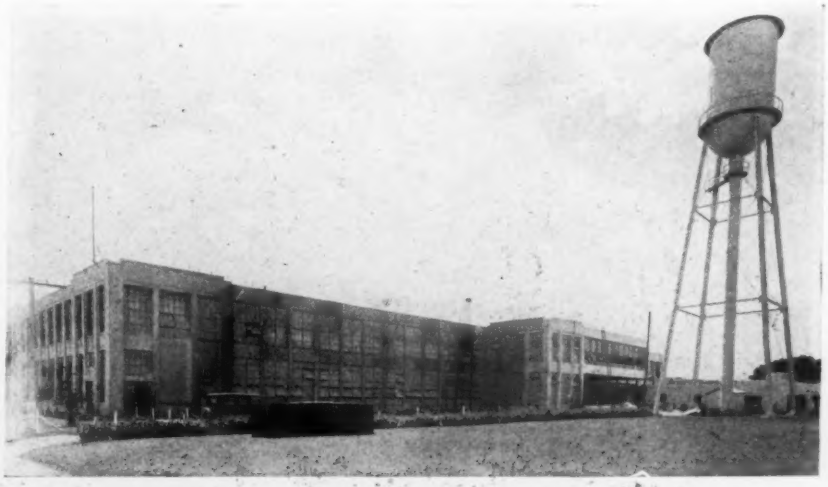
Cotton manufacturing has developed comparatively slowly in Texas; due, perhaps, to several reasons. Texas capital, particularly available, has always found satisfactory investment in other lines of production—some possibly yielding quicker and larger immediate returns; during the earlier years, due to a lack of knowledge of the industry, there was little understanding of the advantages of cotton manufacturing, of what a significant part a mill might play in developing and rounding out established agricultural sections.

The State Is Becoming "Industrially-Minded".

Within recent years, however, Texans have realized what such plants can mean, and along with the new industrial attitude which has come about, there is an increasing interest in cotton manufacturing possibilities, and investigation has demonstrated that Texas finds herself admirably equipped in many respects for a natural, healthful expansion. With a sympathetic attitude thus developed, and potentialities in the way of natural and developed factors essential to manufacturing available, the proper kind of promotion will result in a healthful, satisfying and altogether wholesome expansion of cotton manufacturing in the state. Important factors in Texas realize this; and are moving properly in the direction of exploiting and utilizing the possibilities which the state affords.

A brief study of the present situation in Texas, as relates to cotton mills, may be informative to the readers in other sections who vaguely recall that "Texas does have some mills, but they are all small and make heavy goods."

Considering the fact that only recently Texas has become industrially-minded, so to speak, there has been a



The Planters & Merchants Mill, at New Braunfels, Texas, Is An Example of Texas Diversification. Ginghams and Rayon-Striped Dress Goods Are Among Its Products.

substantial growth in spindleage. In 1905, there were 94,390 spindles in the state. Since the war days of 1918, the figure of 132,236 spindles at that time has virtually doubled, as in 1927 there was a total of 268,848 spindles; indicating, for one thing, that a large proportion of the spindles are comparatively new. With a present total of about 26 mills, this gives an average spindleage of around 10,000.

Out of the total number of mills, about half have been located within a 100-mile radius with Dallas as the center; but the remainder are scattered from the western border town of El Paso to Houston and Galveston on the Southeast. Practically all of the plants do weaving, with two plants producing sale yarns.

It may be surprising to learn that, while ducks and osnaburgs comprise the highest percentage of poundage production, Texas mills are exceptionally well-diversified as to product. Tire fabrics, sheetings and drills, denims, ginghams, blankets and various kinds of colored goods, involving raw stock, beam and piece-goods dyed materials are also manufactured in quantity. This dissipated the writer's original impression that the state was devoted entirely to the production of heavy, easily-manufactured products. There is a bleachery, at Post, in the western part of the state, finishing high-grade sheetings; the Planters & Merchants Mill at New Braunfels uses rayon for striping and decorative effects in dress and shirting materials—these are further evidences of a balanced, diversified industry.

Operating Executives Are Progressive.

Personal investigation in a considerable number of the Texas mills has demonstrated that the operating executives are keenly awake to progressive developments—and one finds an up-to-date, aggressive type of man in charge of the mills. The Texas Textile Association, composed of the superintendents and department heads, meets semi-annually, and is affiliated with the Southern Textile Association. Through its discussions the operating men keep posted concerning current manufacturing practice.

There are two textile schools in operation in Texas, for supplying trained technical men for the mills—one at College Station, a department of the A. & M. College, which has been in operation for many years; and a newer institution, the Texas Technological School, at Lubbock, where an up-to-date modern plant has been installed. From the standpoint of manufacturing efficiency and equipment, Texas occupies a very enviable position.

The Card Room at Postex Mills, Post, Texas. High Grade Sheetings Are Woven and Finished at this Plant.

Now, as to the potentialities and possibilities of Texas as a cotton manufacturer—it must be borne in mind that this article is intended to neither exploit nor to prophesy. An outside and impartial observation might, however, be of interest. The development of the "industrial viewpoint" within the state has been referred to. There is an increasing number of towns and cities in Texas eager for plants to consume the fleecy staple with whose growing Texans are so familiar. There always has been available capital in Texas, seeking investment, but two reasons, perhaps, are responsible for its finding other fields. The state is so large, and possesses so many undeveloped resources, that in the past capital has had very little difficulty in finding profitable application, and, quite naturally, the owners of the capital choose those outlets with which they are most familiar. That leads to the other fundamental reason: an apparent lack of familiarity with the possibilities of cotton manufacturing.

Of available labor, water power, reasonable taxation and legislation, climate and market, Texas seems to have an

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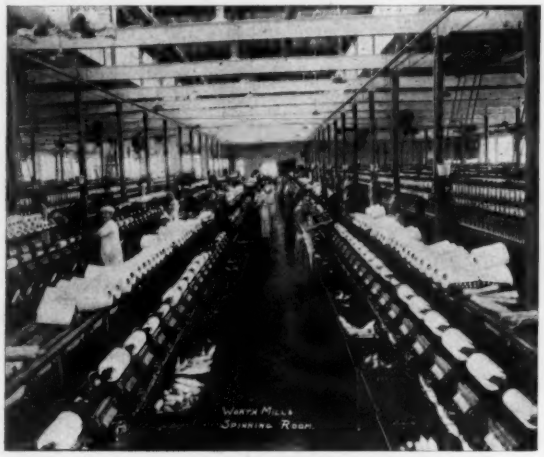
Worth Mills, Inc., Fort Worth, Texas. Established Several Years Ago by Eastern and Local Interests. Cord Tire Fabrics Are Made Here.

<>

abundant supply. With these resources available, it has needed their proper exploitation, first, among its own people, and, second, to outside interests.

Various agencies, wisely operated, have set about to tell Texans and others of what might be expected. Added to these efforts is the influence of the established mills themselves, and the records they are making.

One instance of the efficient manner in which Texas is actively exploiting and developing her latent resources was the organization, within the past year, of Industrial Dallas,



An Interior at the Worth Mills, Inc., Showing a Section of the Spinning Department.

Inc., a body established by public-spirited citizens to advertise to the world the resources of Dallas and its industrial area. The movement is patterned after the Forward Atlanta movement, begun in the Georgia city about two years ago, as a result of which, incidentally, millions of dollars have been added to the pay-roll of the city's industrial area. This method Industrial Dallas, Inc., is following—"telling the world," by advertising, surveys and direct campaigning with capital seeking investment; with a fund of $450,000 raised by public subscription to finance the work.

Community Advertising Being Utilized.

A definite indication of the logical and broad way typifying Texas' efforts toward industrial expansion is found in a brief outline of this Industrial Dallas, Inc., program. This movement for a community advertising project began more than two years ago, when a group of Chamber of Commerce leaders determined that the time had arrived for the Southwest, including Texas, Oklahoma, Arkansas and Louisiana, to take steps to build a well-rounded economic structure and insure against periodic general depression resulting from dullness in either of the two lines which had been highly developed in that region—agriculture and oil production—by a scientific development of industry. The first step was to obtain recognized technical talent to conduct surveys, and determine what the potential resources susceptible to development were. With cotton production as the leading industry, especial attention was given to this subject. Surveys made indicated that the Southwest "possessed potentialities which deserved to be brought to the attention of the manufacturers of America, including a newly-developed market area with 12,000,000 population and an annual buying power of $6,000,000,000, besides the necessary basic requirements such as power, fuel, labor, low taxes and building cost, adequate transportation and distribution facilities, excellent living conditions, etc."

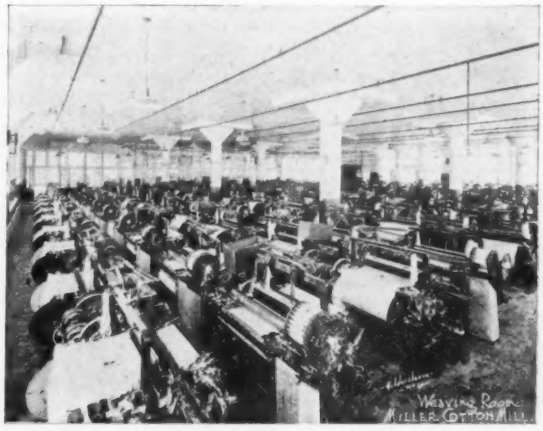
Study of Potential Markets Will Aid.

The Governor of Texas, with the view to presenting Texas correctly, appointed several months ago an industrial committee, headed by John W. Carpenter, president of the Texas Power & Light Co., and including other men of the state intimately connected with and interested in its industrial development. This committee has been instrumental in negotiating visits from prominent bankers and industrialists from other sections to Texas, and has been active in showing them the state's resources and foundation for further growth.

The natural result was the laying out of a studied campaign, to cover three years, with an annual expenditure of $150,000; the fund for this being over-subscribed by 750 Dallas business firms and individuals. An excellent program of publicity and exploitation is now in operation.

Chambers of Commerce, boards of trade, and other local agencies in various cities and towns, awakening to the possibilities of cotton manufacturing, are organizing for the exploitation of their respective sections. In the past, there has been criticism of the "promotional" methods used in certain instances in the expanding of Texas' mill industry, but, in the newer "industrial attitude" which has developed, there seems a recognition of the need for sound, basic principles of development.

This article will not enter into a detailed discussion of the state's resources—and properly so. However, it was felt that the foregoing facts might serve to inform manufacturers in other sections of conditions in a territory which is, in spite of a geographical separation, in fact an integral



The Weave Room at the Miller Cotton Mills, Waco, Texas. Each Loom Is Equipped With Individual Motor Drive. Denims and Other Colored Goods Are Manufactured.

part of the South's expanding textile field. An obvious fact is the proximity to the supply of Texas cotton. There is one other phase, which, it is doubtful, is thoroughly recognized even among Texans generally, and that is the excellent accessibility to tremendous local and nearby markets. It would seem logical that in future development, Texas should consider the advantages to be gained by catering, in the type of product made, to a vastly important and available outlet at her own doors, and in the great consuming western markets.

Penetration and Weight Added in Sizing

What Represents "Perfect Penetration"? Is It Desirable? How Is It Secured? How Should Weight Added Be Figured?

By John W. Card

THOSE of us who read of the proceedings of textile meetings, or follow the arguments of various mill men who express themselves in the columns of our textile magazines, accept some of the statements we read, but oftentimes we see statements that do not agree with our experiences and beliefs. Sometimes through being too busy, and sometimes for other causes, such as pure laziness, we fail to make known the fact that we are not in accord with statements made, and so fail to bring out some good points.

All of us know the expression, "conditions alter circumstances." This is especially true in a cotton mill where there are so many variables to deal with. It is necessary to sift out facts concerning the other fellow's expressed beliefs and to fit the part that is usable to our own conditions.

Is More Penetration Really Desirable?

One of the things that is passed off as a fact by practically all mill men, but concerning which there is room for argument, is the statement that the more penetration we get at the sizing process, the better the resulting yarn. The idea being that if we can get perfect penetration, that is, if the size could be made to penetrate to the very center of the diameter of the yarn and surround every fiber making up the yarn, we would have the perfect yarn, as far as the sizing process is concerned.

I do not think that this would be the ideal yarn and I have heard other mill men, who deal with size, express the same thought. I do not think that the best sized yarn is that yarn which has size penetrated to its very center, and surrounding every fiber. Such a yarn, in my opinion, would

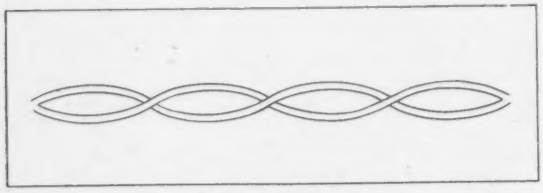


Fig. 1. A Cotton Fiber—Showing Corkscrew Twists Along Its Length.

be far too brittle. It would be so brittle that it would be liable to break when bent.

Yarn is made up of a number of fibers. We know that each fiber is a collapsed tube with corkscrew-like twists along its length. This feature is illustrated in the sketch, Fig. 1.

The unsized yarn gets its strength from the clinging action of these fibers about each other in the fitting together of these twists, one against another. The sketch in Fig. 2 illustrates this.

The tighter the yarn is twisted (up to a certain point) the more strength is given the yarn, because this clinging action is aided by the added turns of twist squeezing the corkscrew fibers one against another.

Now if the size was made to penetrate to the very heart of the yarn, and to form a coating for every fiber, the size would interfere with this clinging action, and the sized yarn would be too stiff for good weaving. To give good weaving is the object of the sizing process.

It would seem more natural for the aim of the sizing process to be to paste down the fibers protruding from the body of the unsized yarn; to fill the "valleys" on the surface of this yarn; and to penetrate far enough to be well anchored. This would result in a smooth surfaced yarn, able to resist the friction of heddle and reed action. We know that a good size adds only about ten per cent or fifteen per cent to the strength of the yarn. It seems logical that the pasting down of outside fibers and the binding together of all the fibers by an outer coating of size, could well add this much strength, and that we do not need a size that would penetrate to, and paste together, every fiber in the yarn.

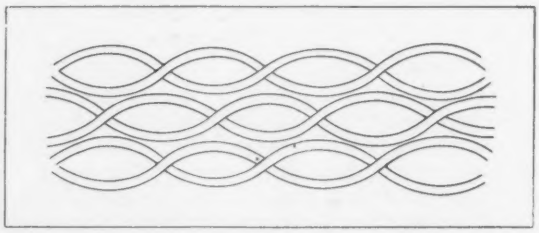


Fig. 2. Showing How the Corkscrew-Like Twists of the Cotton Fibers Fit Together and Give Strength to the Yarn.

We can well imagine that the much-sought-after quality—elasticity—is not present in a yarn that has size penetrated to the very core and surrounding every fiber, while it could well be present where the yarn is merely coated with size.

A sample of a cross-section of a piece of sized yarn is shown in Fig. 3.

Such cross-sections are sometimes used to illustrate the fact that the size penetrates to the heart of the yarn. These cross-sections are made by taking an end of sized yarn, coating it with paraffin, then slicing off a cross-section of the yarn about one one-thousandth of an inch in thickness. This cross section is then wet with an iodine solution, which solution colors the starch in the specimen to a blue-black color. The specimen is then fixed to a slide, the paraffin dissolved away by means of Xyol, and a picture taken with a photographic enlarging apparatus. We are told the presence of starch is shown by the dark areas in the picture.

Some of us who have taken such pictures doubt their practicability. While some dark areas show the presence of starch other dark places merely show the presence of a cavity, or opening, where there is neither size nor fiber to fill the space. It will be noticed in this picture that the space in the center of a fiber shows dark. We know this

dark space is a hollow, or cavity, and not a picture of size, for no size was present in the fiber itself. If you have ever taken a picture including a doorway, you will notice that the doorway, or open space, shows dark in the picture.

It is argued that the size mixture must be such that it will penetrate thoroughly or the size will shed. Shedding is more often due to the fact that the size was not cooked long enough. Corn starch as it comes to the mill is made up of many little sacks or starch granules. One of these starch granules is illustrated in Fig. 4.

When heated with water these granules swell to many times their original size and finally burst through the cellulose sack. This bursting takes place at a temperature of about 167 degrees Fahrenheit. It is an interesting sight to stand near a cooking kettle and watch the action as the granules swell and swell until it seems that they are going to more than fill the kettle. The semi-opaque, jelly-like, mass formed when the sacks burst, gradually thins down as the heat rises and the mass begins to boil.

The granulose is soon turned into soluble starch and dextrine as the size boils. The cellulose outer coating resists the action of the heat for a much longer time before being turned to soluble starch.

If the size is not cooked long enough after it has jelled to permit the cellulose sacks to be turned into soluble starch, and to fit well down into the "valleys" on the surface of the unsized yarn, these sacks get in the way, and

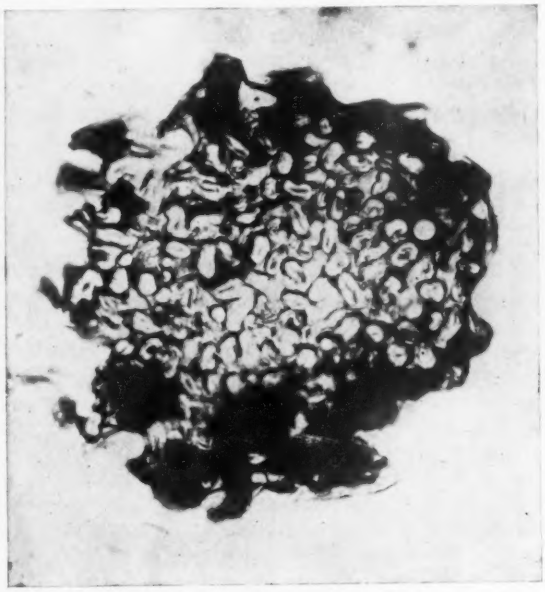


Fig. 3. A Cross-Section of One End of Sized Yarn. "The Dark Areas Indicate the Presence of Starch."

prevent sufficient penetration for good "anchorage," and cause the starch to pile up on the outer surface of the yarn. Not being well fastened, it then sloughs off when the action of the heddles and reed are brought to bear at the loom.

This resistance to breaking down of the cellulose sacks is much more pronounced in Pearl, or crude, starch than in the modified, or thin boiling starches. The reason being that the thin boiling starches have had this cellulose sack removed to a greater or less degree by the action of the chemicals used in the manufacturing process. We have thin boiling starches of 20, 30, and 40 fluidity, etc. This difference in fluidity being the result of removing more or less of the cellulose sack in the manufacturing process.

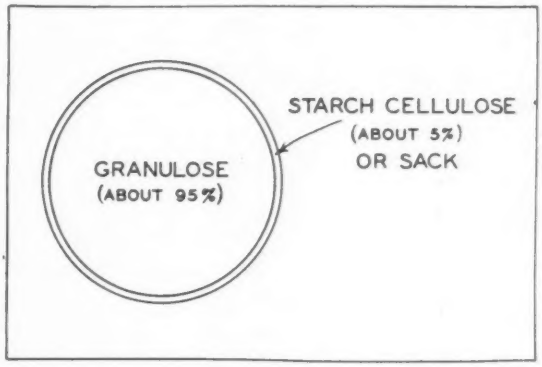


Fig. 4. A Starch Granule. The Content of Starch Cellulose (About 5 Per cent) is Indicated by the Space Between the Circles.

Information and figures from other mill men on this subject should be of interest.

How to Figure Weight Added in Sizing.

Somewhat aside from the subject of penetration and the ideal size but concerning the amount of size added to the yarn at the sizing process, it is suggested that a surprise is in store for those who are willing to look well into the subject of variation in the amount of size added at the sizing process.

Assuming that the mill has slashers running on one size mix that is intended to add, say, ten per cent size to the yarn, and that it is equipped to accurately determine the amount of size on the yarn, it can safely be said that there will be found a variation of from three to six per cent in the amount of size added to the yarn.

Many mill men will say that they get ten per cent size, and will admit to a variation of one-half per cent above or below that figure. But a series of accurate tests will show that the size thought to be ten per cent will at times run from six per cent or seven per cent to eleven per cent or twelve per cent.

In running such tests it is well to remember that it is not correct to figure the percentage of size added by the method of subtracting the weight of the yarn on the section beams, from the weight of the yarn on the loom beams, and dividing, to find the percentage of size added. In using that method one assumes that the unsized yarn and the sized yarn have the same moisture content. This would not be true one time in hundreds. As an example, such a method of figuring would give the following (disregarding waste):

10—400 pound section beams in slasher creel ---------- 4000 Lbs.
30—147 pound loom beams made from this set ---------- 4410 Lbs.

Difference ---------- 410 Lbs.

$\frac{410}{4000}$ = 10.25% size regain (if moisture in the yarn is disregarded).

Now assuming that we have tested and found the amount of moisture in the section beams as 6%, and in the loom beams as 8%, this same problem works out as follows:

10—400 pound section beams in slasher creel ---------- 4000 Lbs.
30—147 pound loom beams, corrected from 8% to 6% moisture content, gives 30 × 144.06 lbs., or ---------- 4321.8 Lbs.

Difference ---------- 321.8 Lbs.

$\frac{321.8}{4000}$ 8.05% actual size regain.

It is seen that this method, which disregards moisture, gives materially incorrect results.

A correct method for determining the percentage of size on the warp yarns is given, and illustrated by an example, below:

Sized yarn weighed on grain scales---- 400 Grains
This same yarn after being bone dried in the oven weighed ---------- 370 Grains

Loss ---------- 30 Grains

$\frac{30}{370}$ 8.11% moisture regain in the yarn.

Desize this sample of yarn by keeping in a bath of Maltex for two hours at a temperature of 140 to 155 degrees F., while stirring frequently. Wash thoroughly four times in hot water, and rinse in running cold water. Then bone dry in the oven and find it weighs 325 Grs.

Tests with this number warp yarn have shown that the action of the Maltex removes 1.50% of its weight in waxes and greases natural to the cotton.

Adding back to the bone dried sample the moisture and the 1.50% for materials removed we have:

325 grains plus (8.11% plus 1.50%) or 325 × 109.61% ---------- 356.23 Grains, weight of the original sample less loss.
400 grains (original sample) less 356.23 grains (desized) -------- 43.77 Grains, lost by removal of size.

$\frac{43.77}{356.23}$ 12.29% size regain.

Metallic Card Clothing.

Since the appearance of an article, in the April, 1927, issue of COTTON, describing Platt's metallic card clothing, later tests have been made under mill conditions in England and France, which are interesting, especially since a number of American spinners have seen this product in operation.

With this clothing, which was described fully in the issue mentioned, it is stated that with fine, clean cotton, it is only necessary to brush seeds, dirt, etc., out of the clothing every one to three months. The clothing may be applied on the cylinders in the mills; and any possible repair can be carried out in the mill also.

A test of the elasticity, strength and breaks of this rigid metallic clothing, made in a French mill using Louisiana cotton, showed a mean elasticity of 4.49; a strength of 49.93; and breaks of 1.00. When stopped after 484 hours of continual operation, the card when cleaned with a brush produced 2/3-ounce of seed, husks, and no cotton, it is stated.

In Manchester, a test was made with 100 pounds of cotton, and on a card equipped with metallic card wire,

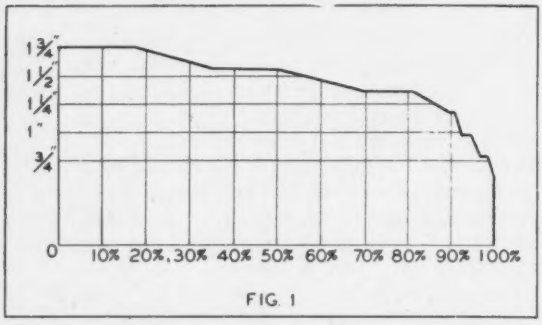


FIG. 1

the following waste was secured: Back fly, 2 pounds 6 ounces; front fly, 3 ounces; flat strip, 2 pounds 14 ounces; brush strips, none; invisible loss, 2 pounds 8 ounces—a total of 7 pounds 15 ounces. Compared with a simultaneous test on a card not equipped with this type of clothing, according to the manufacturers, the test showed a saving in waste of 29.4 per cent, with 3½ per cent additional sliver produced. The droppings and flat strips waste from the card covered with metallic wire, it is stated, was dirtier and contained only dead and short fiber; it being pointed out that under this system all of the good fiber goes through into the sliver.

Two interesting graphs are shown in Fig. 1 and Fig. 2. In Fig. 1 is the length of the cotton before carding on a test; and Fig. 2 shows the same cotton after carding with

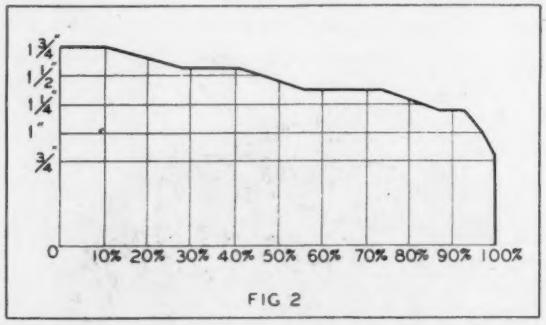


FIG 2

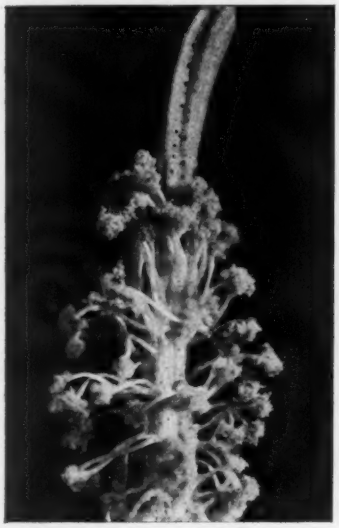
rigid metallic clothing. In Fig. 2 the amount of fibers longer than ¾ inch is evident.

The clothing is produced by Etablts Platt Freres, Roubaix, France, who, as explained in the previous article, claim that due to the pins in the clothing being made without hook or knee, the clothing does not fill up; the points in working become sharper, it is stated, the slipping of the fibers down the points producing this effect and eliminating grinding. Because of this construction, the manufacturers state, the weight of the sliver after stripping remains the same because the clothing does not fill up.

New Chisholm-Moore Differential Hoist.

Chisholm-Moore Hoist Corp., Cleveland, Ohio, have brought out a new direct differential hoist, known as the "Blue Boy," which is equipped with the Hercules Inswell electric welded load chain. Because of the extra heavy load, sheaves, malleable iron yokes and drop-forged hooks are painted blue, and the chain is copper plated. A new catalog insert section, describing this and other Chisholm-Moore hoists, is now available. The Chisholm-Moore Hoist Corp. is the new name of the Chisholm-Moore Manufacturing Co., recently acquired by the Columbus McKinnon Chain Co.

What *Is* COTTON?—*By Paul Seydel*



Micro-Photograph of Cotton Plant.

A DISCUSSION of the fiber from a new and interesting viewpoint. A textile chemist analyzes the cotton fiber and finds some elements which may be new to the mill man. The article shows why the various properties of cotton affect its handling; and how these must be considered, particularly in the warp sizing and finishing processes.

An Opened Cotton Boll on Stalk.

THE first thought of a textile chemist asked to size cotton is, "What is cotton?"

The answer is given in the literature, but no wise chemist is satisfied with the opinion of one writer. It is often incomplete, sometimes misleading, seldom entirely satisfactory. The best way to obtain information is through a personal investigation of the whole bibliography on the subject and a careful checking up in the laboratory, if the bibliography is incomplete or contradictory. Josh Billings said, "Books are full of things that aren't so." Every chemist agrees with him.

View of a Cotton Bloom.

The bibliography on the subject of cotton is very profuse. There are many textbooks describing cotton physically and chemically, but outside of the contents in cellulose and moisture, there is a good deal of discrepancy in the reports of a number of authorities.

The raw cotton of commerce or lint is the fiber after being torn from the seeds by the process of ginning. This is composed of a single cell, which when unripe is hollow and tubular in formation. When it ripens, it flattens out, assuming tape-like form with round edges.

The Dictionary of Applied Chemistry, by Sir Edward Thorpe, represents cotton as consisting of about 90 per cent of cellulose, together with 7-8 per cent of water, 0.4 per cent of wax and oil, 0.6 per cent of nitrogenous substances and about one per cent of mineral matter (ash). The proportions vary widely from one sample of cotton to another. The wax is present as a thin layer on the surface of the fiber and renders it water-repellent. That is, before it is made absorbent through scouring, it does not absorb water readily. This wax is similar to Canauba Wax and has a very high melting point: 186 degrees Fahrenheit. In the pure state, it is insoluble in solutions of caustic alkali, therefore the presence of solvent oils, of tallow and other vegetable and animal fats in the size helps to remove this wax, which is necessary before bleaching and finishing.

Besides the wax, cotton contains a certain amount of stearic and palmitic acids. The oil in the fiber is the same as that of the seed. Among normal constituents of cotton are: Carnaubic acid, palmitic, stearic and oleic acids, ceryl, gossypyl and montanyl, alcohols, triacontane, hentriacontane, phytosterol, amyrin, etc. These products in raw cotton make it advisable if not necessary to carefully scour and bleach the fiber before it is subjected to many of the finishing processes, for although ordinary de-sizing may eliminate most sizing ingredients, it takes very strenuous detergent scouring to emulsify, dissolve and eliminate the waxes and resins which are normal to raw cotton.

Often a chemist will analyze a cloth and find unsaponifiable fats and chlorides which he attributes to the size, whereas they are natural ingredients of raw cotton, as most of the chlorides and unsaponifiable fats found in cloth are natural to cotton, and exist already in larger quantities than can possibly be added through the use of the average light size, which is used customarily in this country.

The nitrogenous substances consist of the remains of cell protoplasm existing in viscous form in the unripe cell.

The mineral contents are chlorides, carbonates, phosphates, and sulphates of potassium, sodium, magnesium and calcium and smaller amounts of iron and aluminum.

An amount of ash much in excess of one per cent is traceable to the presence of sand and other mechanical

impurities. In their "Principles of Bleaching and Finishing Cotton," page 80, Trotman and Thorpe, write: "The ash content of cotton may easily be underestimated owing to the fact that it contains chlorides which are lost unless the ignition is carried out at a low temperature. A careful investigation will reveal that nearly half of the mineral content of cotton is composed of the chlorides of Sodium, Potassium, Calcium and Magnesium. To the presence of these chlorides is partly due the fact that cotton is hygroscopic and normally contains a considerable amount of moisture and that the moisture content varies not only with atmospheric conditions, but also with the amount of chlorides the raw cotton contains."

The mineral salts contents of all vegetable matters vary with the nature of the soil in which they have grown. If yarns made with raw cotton are scoured and boiled with water, then dried, they do not regain moisture as readily nor as much as warps containing the normal mineral salts of raw cotton.

Colored warps made of dyed cotton that has been scoured and washed are generally less hygroscopic than warps made of raw unscoured and undyed cotton, if the scouring has been sufficient, the natural wax and oil of this cotton has been removed as well as the soluble mineral salts, and this should be taken into account when advising a size formula for colored warps.

With a full knowledge of the chemical composition of the cotton fiber, the textile chemist is in a better position to judge what is needed to prepare the warp for more efficient weaving and to understand the compatibilities of the ingredients to be added to those already present as well as their compatibilities with ingredients and treatments used in further processing of desizing, bleaching, finishing, storing, etc.

Further Information on Greenville Show

Visitors to the Southern Textile Exposition at Greenville, S. C., who have not secured reservations for rooms are requested by the management to write direct to the secretary of the reservations committee, Mrs. W. W. Stover, Box 307, Greenville, S. C. All rooms at the hotels have been reserved by exhibitors except the eleventh floor of the Poinsett Hotel, which has been reserved by W. G. Sirrine, president of the Exposition, for visiting mill executives. This floor will be kept exclusively for presidents, treasurers, secretaries and superintendents of textile plants. Clerks will be on duty at the hotel for the sole purpose of handling this floor. Reservations should be made in advance.

Preparations for the Exposition have been under way more than a year and a half in the executive office. Electricians have just completed the installation of heavy duty wiring in the annex, giving this building the same illumination and capacity for driving machinery as the main building. Fiske-Carter Construction Company, Greenville, S. C., are erecting the two-story addition to the main building adjoining the annex.

New Year Book of National Association.

The eleventh edition of the year book of the National Association of Cotton Manufacturers, which has grown in importance and value in the past several years until it has become one of the leading publications of its kind, is now being distributed. Because of the enormous amount of statistical and technical information regarding cotton and the industry that the book contains, it is widely used as a reference work. The present volume is believed to include practically all of the authentic information about the industry and manufacturers that interested persons might want.

New tables have been added in the 1928 statistical section including those on weight and dimensions of foreign cotton bales and those on premiums on staple cotton in the Memphis market for the last seven years. Statistical tables from the previous issue have been revised. The import and export figurers from the earliest date available have been added to the statistical history of the industry in the United States.

In the technical section the list of constructions of standard fabrics has been considerably extended and includes practically all of the great variety of fabrics reported on by the Association of Cotton Textile Merchants of New York and the Cotton-Textile Institute, Inc. Federal government methods of determining size are to be found in the new arrangement of test methods.

A review of the last seven American cotton crops, 1921 to 1927, is one of the interesting features of the book. It gives in concise form all of the figures on the total acreage, production, the average grade, loss from boll weevil and shows that the crop in the flooded area last year was 1,500,000 bales less than in 1926.

The growth of the rayon industry is another of the featurers of the statistical section which shows United States and world production and prices and chief uses for rayon in connection with the cotton industry.

Copies of the book are available at Association Headquarters, 80 Federal St., Boston, Mass.

Two Book Reviews

Elementary Book on Textiles.

INTRODUCTION TO TEXTILES, by A. E. Lewis, has been published by Sir Isaac Pitman & Sons, Ltd., New York. It contains a complete survey of the various textile fibers, their preparation, and a brief description of the various processes of manufacture. The method of ascertaining the counts of the various yarns is given along with tables comparing the breaking strength of each yarn. This book is written especially for the elementary textile student.

A New Book on Cotton Yarn Manufacture.

COTTON YARN MANUFACTURING PROBLEMS, by the late Stephen E. Smith, has just been published by the Bragdon, Lord & Nagle Company, 334 Fourth Ave., New York. This is a reference book on practical mill problems arising in the manufacture of cotton yarns. Mr. Smith has listed two hundred practical questions and answers dealing with all phases of the manufacture of cotton from the picker room through the spinning room. The price of this book is $3.00.

Owing to the untimely death of Professor Smith in 1926, Gilbert R. Merrill, who had been associated with him at Lowell Textile Institute, and succeeded him as head of the Department of Cotton Yarns, arranged the final material which he had left. This material was published in serial form in *Textile World*.

Trouble-Finding in the Textile Mill

Those Irksome Details of Plant Operation Are, After All, Easy To Locate by the Exercise of Care and Patience

By R. A. Soniaman

TROUBLE-FINDING is locating the source or cause whatever may be retarding the efficient functioning of a going concern.

Daily, opportunities present themselves whereby an alert second-hand, overseer, superintendent, production manager, or other executive, may help in solving problems that vex the lower staff members and which contribute to the general factors that may prevent attainment of the maximum of efficiency.

The trouble may be with any one machine, or a group of machines, a roomful of them; or, it may be that the waste somewhere is excessive; the cleanliness of a department may be in question; there may be an undue consumption of bobbins or spools; a machine, or group of machines may have fallen down in the production expected of them; or, it may be any one of a hundred and one things that go to make up mill life.

But, whatsoever the cause may be, there exists the opportunity for the rectification of the trouble.

The reader may say: this is a matter for the section-hand to straighten out—he's paid for it! Well, it is, and it isn't. In the medium and large size plants, the duties of the section-hands are generally pretty well laid out, and they are arranged so that in order to get his work done he has to keep stepping on it, as the saying is. So that there will be times when he cannot immediately solve and straighten out all the kinks that crop up in a day.

USUALLY, some of the most baffling problems around a cotton mill are revealed as simple things when the solution has been found. But in the meantime, frequently the operating executive becomes perplexed—and sometimes the "super" is worried about something that materially affects smooth running conditions, but which later seems surprisingly simple. But at the time—it's a facer!

The purpose of this article is to caution the reader that, under such a circumstance, a retention of one's temper, and a studied, careful survey and checking up of all of the direct and indirect influences is essential. The author's account of some bothersome incidents could probably be matched by almost any mill man.—The Editor.

Everyone Must Cooperate.

Accordingly, somebody else will have to step into the breach in order to keep things humming proper. As general illustrations are of introductory value when explaining a matter, perhaps at this point it may be advisable to take up an example.

Let it first be assumed that something has gone wrong with a certain machine—the section-hand has worked on it, the fixer has taken a crack at it, and yet, it is not functioning properly. Production is threatened, the workers who are on piecework are getting uneasy.

A word of caution. To the enthusiast who feels like jumping in up to his neck in a situation like this, and beginning to do something, let it be said: don't be too hasty. The section-hand and the fixer have worked on the machine. They are good men—or they shouldn't be on the job—and presumably, they understand the machine pretty thoroughly. If they have tinkered on it, and it still goes bad, something a little out of the ordinary, no doubt, is the matter. And this often requires a bit of thinking, a little Sherlock Holmes work.

It is in order to look the machine over. The section-hand relates what he has done, when the trouble began, and admits that he cannot put his finger on the cause. With this information in mind, and having given the machine a cursory once-over, an analysis of the problem can take place. The worker is questioned as to when the difficulty began, and is asked to explain just how the trouble manifested itself.

Then the various factors, few or many, which have a bearing on the case are gone over very carefully, one at a time, to ascertain how each fits into the matter. Should this plan fail to bring results, the method of trial and error may be used, working first at this thing, and then at that thing until the point at issue is uncovered.

By doing the job in this way, every possible point of contact with the problem is made, and it is only a question of time before the source of the puzzle is undecked. It is procedure with forethought, and it is far superior to a haphazard, slapbang, method of hammering and tinkering about in an aimless way. Obviously, there will also be found ample opportunity for a person with a dash of ingenuity to suggest improvements that will tend to do much to eliminate or at least reduce the possibility of future similar contingency.

A Careful Survey is Wise.

A specific example of a difficulty which actually took place some years ago will illustrate what is meant in connection with solutions of such problems. It was in a well-ordered yarn mill on a machine making a two-ply yarn. The particular work in question was similar to what had been done before; in fact, there was one machine doing identically the same class of goods for another customer.

The same hook-up was used for the second frame as existed for the frame already running, and yet, when the twist was checked a discrepancy came to light. The twist was too high.

The section-hand looked over his gearing—and everything appeared okeh. And still the difference in twist remained. The second-hand looked the frame over, but he, too, could not locate the trouble. Then the overseer was appealed to, as too much time could not be lost, since the order was an emergency one.

The overseer immediately took up the matter of eliminating one factor at a time in order to arrive at the specific cause. Ordinarily, the factors affecting the twist are: gears; size of bands; size of spindle whirls; size of cylinder; size of bottom roller; and size of travellers.

As the section-hand and second-hand had both said the gears were all right, the other elements were taken up first. The bands proved to be correct, the size of the spindle whirls showed no greater variation than on the other frame, the cylinder was in about the same state of wear as its companion and measured practically the same, the bottom rollers averaged the same size as on the other frame, and the travelers were of the same number, and for the sake of certainty were weighed.

Apparently a baffling proposition. The yarn was sized to see if there was anything here that might throw some light on the subject. But no, the average came out like that of the other. Finally, having exhausted every possible other point of contact with the problem the overseer came back to the gearing.

He decided that every gear which had anything to do with the twist should have its teeth counted, and he ordered the twist gear to be counted first. It was one of a lot that had been received but a day or two previously. It was stamped 55 very plainly, in figures of a size that lent themselves easily distinguishable either on or off the frame.

Presto—There It Is!

But lo! when the count of teeth was finished, it was found that instead of 55 it had only 54 teeth. Here was the cause of the high twist! A 55 gear which actually had 55 teeth was put on, and the twist proved normal. Here

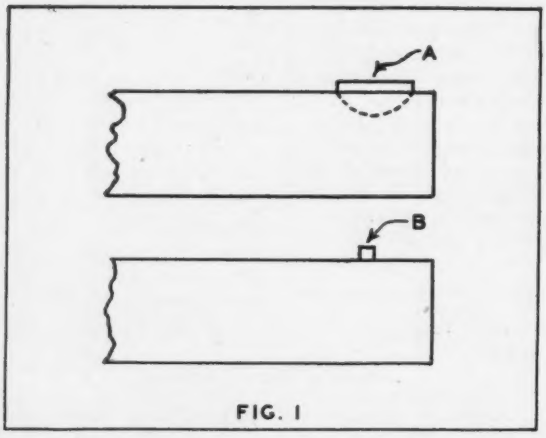


FIG. 1

was a case in which the customer might not have complained about the twist if it had gone to him without discovery by the mill making the yarn, but the latter would have lost some of its profit because of the reduction of production due to the higher twist.

Another instance of wrong twist occurred in a mill which was unfortunate in not being able to retain its executive staff very long, section-hands, second-hands, and overseers, having changed more or less in a comparatively short period of time. The result, of course, was that none of them was familiar with the mechanical changes that the frames had or might have had, happen to them.

One machine which had been running a certain class of yarn was changed to a different kind, a class of work, however, which was being run on a machine identical in every way with the one under consideration. Yet, with all conditions apparently alike, the twist was off.

The various factors affecting the twist were carefully gone into, the gear teeth in fact were counted several times, by different persons. Everything, indeed, had been well gone into, and yet the mystery was unsolved. Everything—except the matter of measuring the diameters of the spindle whirls. This point had been deemed superfluous for the reason that all the frames in this section were equipped with what seemed fairly new spindles, and they all looked alike.

However, when the stalemate occurred, when it seemed that things had come to an impasse—a blind alley—the overseer checked up on the diameter of the whirls and found that they were entirely different from the other frames. For some reason, through error, or shortage of the regular size spindles, the off-size spindles had been put on this frame. And as the men in the room were all comparatively new men, they were not aware of the condition. Needless to say, the spindles were removed, and the usual size put in, so that a repetition of the confusion with its potentiality of serious error would be obviated.

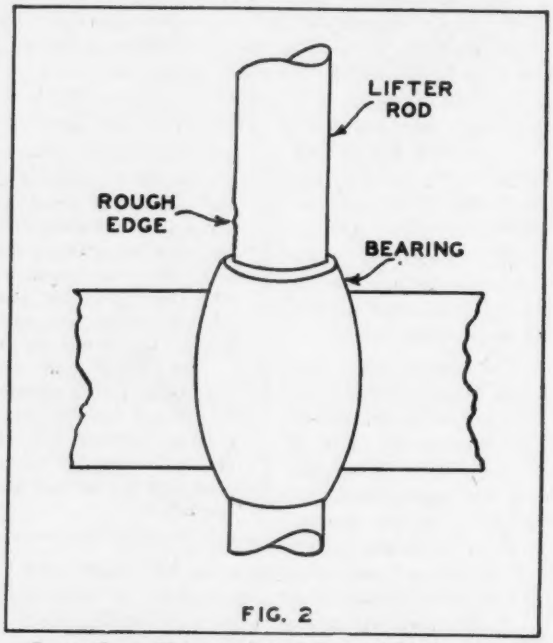


FIG. 2

In another mill, a spooler of the upright slow traverse type was giving trouble, there being a slight drag on the traverse rail at the time when the heart-cam was just going over the point. The usual sources of this trouble were gone over: the belt was tight, the lifter rods were well oiled and did not stick; in fact, there was nothing that could be discovered that would serve as an impediment to the free movement of the rail—no sign of a brush, a spool, or other object, that might inadvertently have become lodged somewhere and which might have caused the trouble, could be seen. The roll under the heart-cam was in good shape, the heart and its large gear were secure on the shaft.

Eventually, the small gear was taken off, and the trouble came to light. For some reason or other, the key *A*, Fig. 1, which was used to fasten the small driving gear to the shaft on this type of machine had been left off, and in its place a pin, *B*, Fig. 1, had been substituted. The pin, having become somewhat worn, allowed the gear to slip during the straining moment when the heart point was going over the roll, thereby causing the jerky, jumping motion of the traverse rail which resulted in a poorly shaped spool.

In the same department, trouble was at one time experienced with another traverse sticking, causing a ridge to be made on the spools. Careful investigation failed to show up any particular cause and the machine was subjected to the trial and error method of digging out the source of the difficulty. As the trouble was not one which occasioned any serious inconvenience or loss in production, the machine was allowed to run for half a day or so between the attempts at reaching the root of the problem.

One of the executives who had not spent any time on the matter happened along when the machine was balking again, and after learning of the various steps which had been taken relative to overcoming the difficulty, started looking over the machine casually as it was running.

He noticed that there were several scars on each of the lifter rods close to the connecting rod which actuated them. He drew attention to them and was informed that the lifter rods had been carefully smoothed and they did not in the slightest interfere with the operation of the traverse.

The next day, however, it was requested that the lifter rods be each carefully examined throughout there whole length to see if there were any scratches which might give trouble. And sure enough, a rough edge indentation came to light in a place on a lifter rod where no one would ever conceive that such a thing could get on the rod. Evidently some hard substance had hit, or fallen, against the lifter in the past, and had bruised it slightly, and in the course of time, the vibration of the machine had sufficiently displaced the lifter rod bracket bearing so that there was a binding when the rough place, Fig. 2, entered the bearing.

Another Case Where Perseverance Won.

Another instance. A small pump for supplying air to a certain machine to give a specific pressure failed at a most critical time to function at normalcy.

The belt which drove the machine was the only variable which had in the past caused the trouble in question. It appeared all right; but as a matter of certainty, it was taken up a bit. No good! The gears were then gone over carefully, the teeth in each one counted by three different persons. Everything okeh! The rotary in the pump was taken out and found correct.

It was put back and the overseer was nonplussed, and, hard pushed for production, concentrated on the pump. Something must be wrong with it—all other factors, even the machine it supplied the air to, had been looked over, and nothing wrong discovered.

So, as has been said, the overseer concentrated his attention on the pump. It was not a large affair, and he put his hand on it to see if it was overheated. Such was not the case. So he slowly ran his finger all around the casing and presto! at a place out of sight he felt a rush of air. The casing of cast-iron had a blow hole which had been forced through by the air. This was after five years of operation.

These are all interesting examples that actually took place, and their number could be continued *ad infinitum*. But enough have been cited to show that trouble finding in the mill is more than merely a matter of passing the buck to the section-hand.

It is a man size proposition if the plant is to run at maximum efficiency. And without the latter, most cotton mills of today might well consider the advisability of liquidation before their more alert and progressive competitors put them out of business.

Cotton Holds Its Own

WHEN the price of cotton jumped about $8 a bale on the season's first U. S. Department of Agriculture forecast, of a crop of 14,291,000 bales, farmers who increased their plantings must have felt justified in going against much vociferous advice.

The harvest indicated by the forecast of August 8th cannot be rated a "small" one. If the forecast proves true, the yield will be above the average for the last ten years and easily in ratio with that of the preceding period when the boll weevil still was absent from a large part of the cotton belt. Yet the price immediately following the forecast was nearly double the pre-war average. It gave to cotton values an index, based on 100 for pre-war averages, of around 180, with that of farm products as a whole below 150 and the all-commodity wholesale price index not much above 150.

The forecast, together with the harvests of the last two years, indicates that cotton growing in the South is getting back on a basis more assuring of sustained production than was the case a few years ago. But it is doing so by making many shifts and changes. The westward drift of the center of production proceeds and growing on the fringes of the belt continues to expand.

In view of all conditions, the price figures show that the world still wants a lot of cotton, and that, despite many handicaps and competition from new and enlarged sources, this king of textile products holds its own.

Britain's Slow but Sure Climb Upward

THE British people are pulling out of their difficulties which during the last six years have seemed to be almost insurmountable. They are recovering, slowly but steadily, much of the foreign trade lost on account of war and post-war troubles. In June they shipped out more goods than during any other June of the last five years. Exports for the first six months of this year were the largest since the first half of 1925. There foreign trade recoveries during the last year and a half have exceeded American gains. About 1,200,000 more people are employed in Great Britain than were five years ago, though unemployment still is large and again increased a little this Summer. The coal industry still lags but is improving. Textiles, especially the American cotton section, continue in bad shape, but combinations looking towards unification of control are being formed and may bring the industry out of its despond.

These evidences can only increase admiration for the courage and steadfastness of the British people. They haven't let go their place of world leadership.

Some New Du Pont Dyestuffs.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., announce the production of Pontamine Light Brown 4G, a direct color with remarkable fastness to light, which is especially recommended by the makers for dyeing cotton, rayon and silk. Another du Pont color is Pontamine Light Orange 2G, a direct color with extreme fastness to light. Pontamine Diazo Orange 3G has been brought out for dyeing cotton rayon and silk. It is recommended for use where good fastness to light, water, ammonia, acids, perspiration, steaming, hot pressing and crocking, is desired.

Finishing of Linen Cloth and Toweling

By T. Woodhouse and A. Brand

This Section of Series Covers Machinery, Formulae, and Methods for Securing Various Calendar Finishes

THREE methods of obtaining different calender finishes are shown diagrammatically at *Q*, *R*, and *S*, in Fig. 10. At *Q* is shown how the cloth is entered for a light calender finish; in this case the weights, illustrated in Fig. 7, are caused to act in the reverse direction to that already described, thus removing all pressure except that due to the weight of the two upper bowls. Very light damping is sufficient for such cases; the cloth is in contact with the steam-heated bowl at one point only, and the pressure is about the lightest obtainable. Other grades of the same type of finish are obtained by causing the levers of the calender to act in their normal direction, and by having all or most of the round weights removed.

A medium calender finish is obtained by entering the cloth as at *R*, Fig. 10. In addition to the pressure produced by the levers and weights, three bowls are above the cloth where it enters into the calender, and the cloth is in touch with half the circumference of the steam-heated bowl; hence, normal damping can be employed. The face of the fabric should be in contact with the steam-heated bowl in order to impart to the face a bright finish. This type of finish is often used on relatively heavy fabrics where finish is not of great importance, although it is desired to add a certain amount of brightness and smartness to the appearance of the cloth. The different position at which the cloth is entered makes it necessary to rotate the steam-heated bowl in a direction opposite to that indicated at *Q* in the same figure. Different grades of the same finish are obtained by varying the number of weights in action.

At *S*, Fig. 10, is shown the method of obtaining heavy calender finishes. The weight of all the four upper bowls acts on all sections of the cloth at the point of entrance, and, as with the former two methods, variations in degree of finish are obtained by alterations in the number of weights in use.

Calender finishes in general impart a flat glossy appearance to the fabric. Where it is desired to obtain a corded or thready effect, the process of chesting is employed, and Fig. 11 illustrates the two common methods. For light chesting, the fabric is entered as for medium and heavy calendering, but instead of running the cloth directly through the machine, it is wound on the top or chesting bowl. Here it is run for, say, two to three minutes, and the indirect pressure acting through the different layers of the fabric results in the irregular surface characteristic of the chest finish. For those fabrics that require a chesting period of five to eight minutes, it is inadvisable to run the

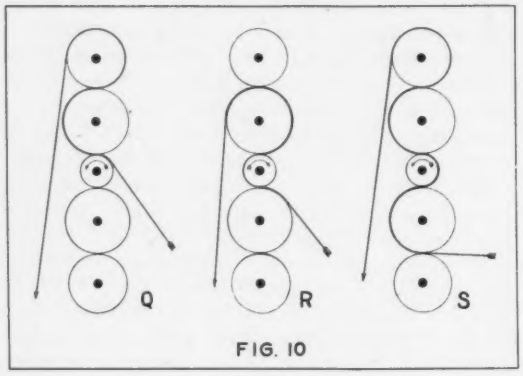


FIG. 10

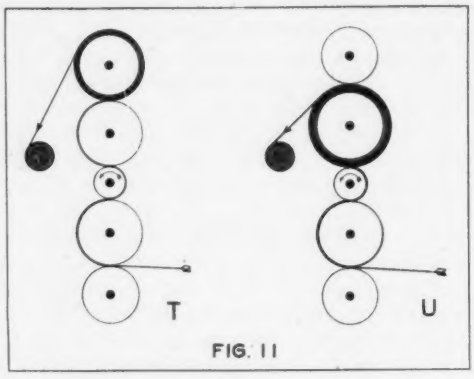


FIG. 11

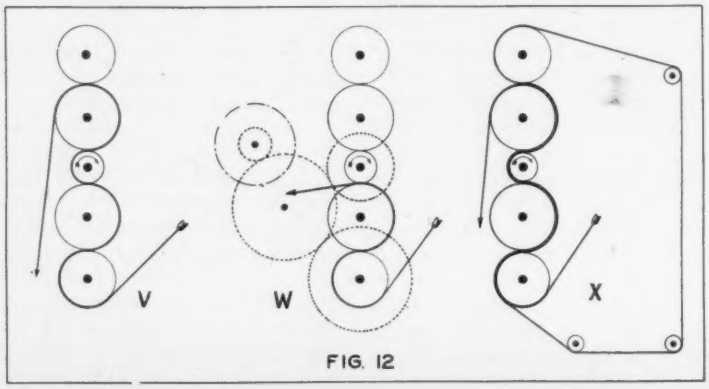


FIG. 12

chesting bowl continuously in one direction, as in this case there is a danger of the outer layers becoming tight to the point of rupture. In such cases of lengthened periods of chesting, the machine should be periodically reversed.

For heavy chest finishes, the cloth is entered in a similar manner to that just described, but it is coiled or wound on the upper paper bowl as indicated at *U*, Fig. 11. The cloth must be well damped as it is continuously in touch with the steam-heated bowl, and, moreover, this finish is usually carried out under maximum pressure, a fact that causes it to be very severe on the bowls. This method of chesting imparts a superior soft finish to the cloth, and is often employed to imitate somewhat closely the finish obtained in the mangle. Part of the result is due to the weight of the top bowl, which acts continuously on the fabric during the operation of chesting.

Other finishes obtainable on the calender are termed swissing or swizzing, glazing and chasing, and diagrams illustrating these three methods are given at *V*, *W*, and *X*, respectively, Fig. 12. The process of swissing is almost exactly the same as ordinary calendering; the only difference lies in the method of passing the cloth first around the bottom bowl. The process is more often used in cotton finishing than in the processing of linen fabrics. Like calendering, it produces a smooth glossy appearance, but not highly glazed as in a glazing calender.

The glazing finish is usually reserved for cloths that

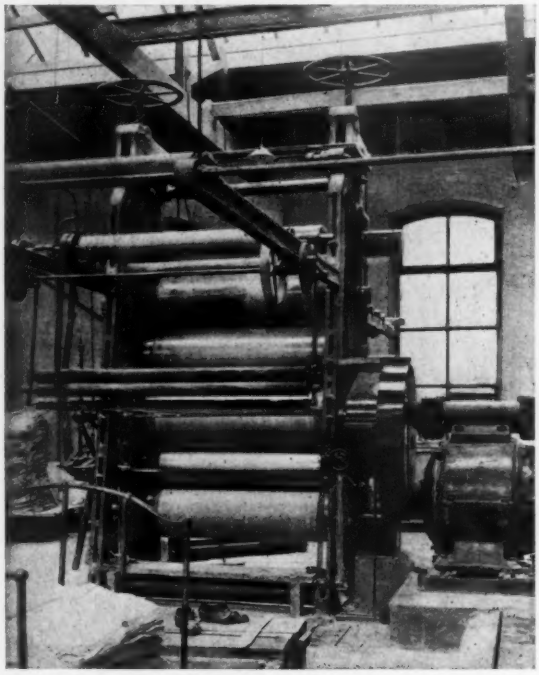


Fig. 13.

have been previously treated with some kind of starchy mixture, or with certain cloth finishing preparations. Substances such as wheat starch, gum tragasol, Quellin, glycerine, zinc sulphate, etc., are used in various mixtures, partly to compensate for the loss of pectinous compounds incurred in the operation of bleaching, but mostly to secure a high degree of stiffness and gloss. In the glazing calender, the bottom bowl and the steam-heated bowl are geared together and driven at different speeds. The steam-heated bowl has the higher surface speed, and because of this, the process may be likened to that of ironing a starched fabric with an ordinary flat-iron, but of course the pressure in the machine is much greater than that imparted by hand. One method of securing the glazed effect is shown at *W*, Fig. 12, where the chain-dotted circle represents the driving pulley, and the four ordinarily dotted circles represent the

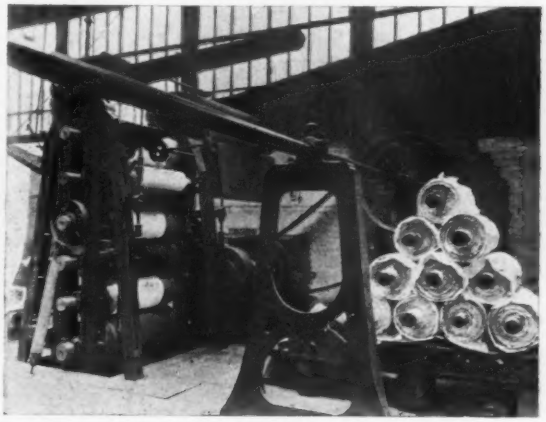


Fig. 14.

gearing from the pulley shaft to the two bowls of the calender.

The speed ratios vary from 1½ to 1 up to 2 to 1, and for certain classes, such as book cloths, may be as high as 3 to 1.

Typical examples of mixtures that may be used for glazing are as follows:

1. For Linen Damasks and Union Damasks

Wheat starch	8.30 per cent
Tragasol	8.30 per cent
Glycerine	0.40 per cent
Water	83.00 per cent
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2. For Linen Paddings and Union Paddings

Sago	12.5 per cent
Tragasol	7.0 per cent
Softening Agents	0.5 per cent
Water	80.0 per cent
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3. For Linen, Union and Cotton Canvas

Sago	5.0 per cent
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Water	80.0 per cent
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A finish that approximates more or less closely to that obtained by beetling is produced by chasing on a calender specially arranged for this process. The cloth is entered as shown at *X*, Fig. 12, and after passing half around each roller in succession is returned by three small guide rollers to the bottom bowl, where it is again entered. This may be done two or three times before the fabric is stripped off from the top paper bowl or roller. When cotton fabrics are thus treated they obtain a thready linen appearance combined with a specially soft feel and a slight water-marked effect.

Plain linens should be finished on the back of the cloth, i.e., the side that is next to the take-up roller of the loom. Linen damasks, napkins, table-cloths, and the like should be finished on the side that exhibits the greater proportion

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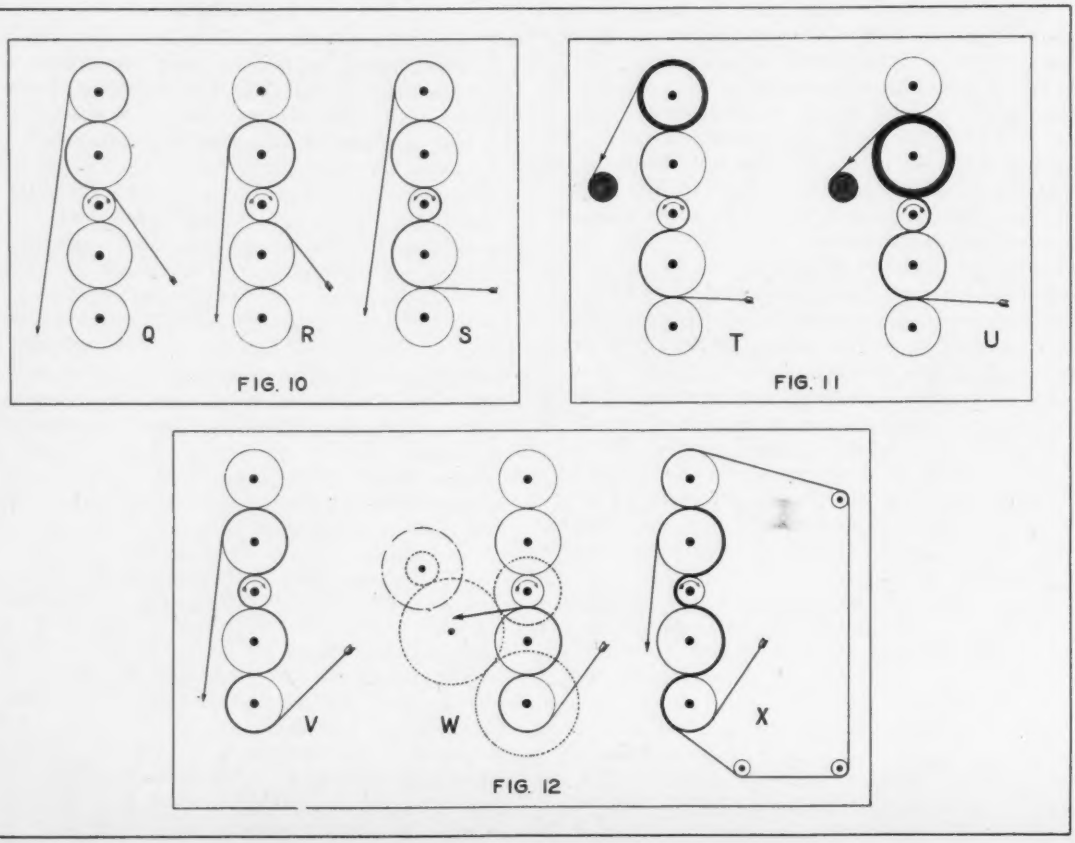

FIG. 10

FIG. 11

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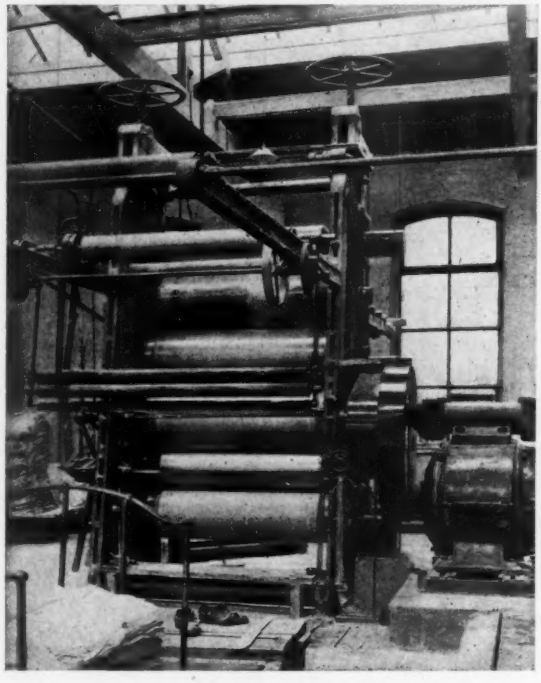

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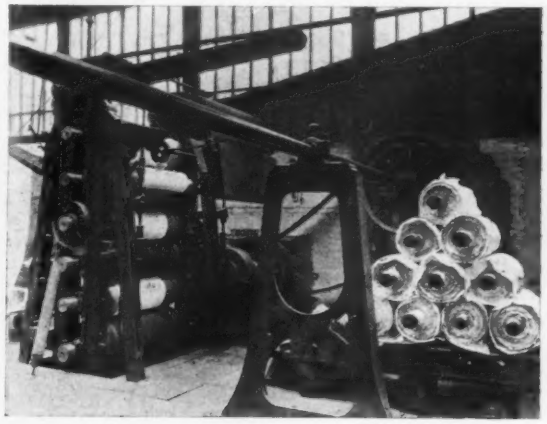

Fig. 14.

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of warp yarns, whereas union damasks should be finished on the side upon which appears the greater proportion of filling.

Photographic reproductions of two different calenders appear in Figs. 13 and 14. Fig. 13 shows a 6-bowl calender driven by an individual motor through 1-inch pitch Renold inverted tooth chain, whereas Fig. 14 shows another 6-bowl machine driven by chain from a lineshaft. In this case also, the chain is of the Renold inverted tooth type, 1¾-inch pitch, 6 inches wide and runs at 1230 feet per minute. A 94-tooth sprocket on the shaft drives a 48-tooth sprocket on the machine.

In Fig. 14, wire-work safety guards may be seen at the nip of the second and third bowls (counting from the bottom) and at the nip of the fourth and fifth bowls. These guards are to prevent possible accidents to operatives when they are entering the end of the cloth between the bowls. This type of guard is frequently in the form of a roller, and Fig. 15 shows the arrangement of these safety rollers on a heavy 5-bowl calender. All the brackets are adjustable vertically in slots not shown, and the rollers themselves are adjustable approximately radially to and from the bowls in conjunction with which they act.

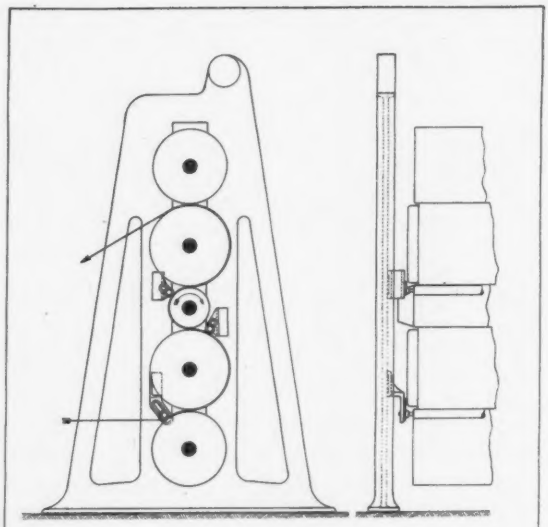

FIG. 15

Attachment for Quilling Silk and Rayon.

A new winding attachment for quiller frames for winding silk or rayon has been patented by Louis E. Anderson, of Charlotte, N. C. At the present time there is one operative required for every forty winding spindles. It is claimed that by using the new attachment one operative can take care of 378 spindles.

With the present type of quiller frame, it is pointed out, the winding of silk or rayon is difficult, because there is not sufficient lap in the winding to cause the silk or rayon fibers to remain wound on the bobbin. By the use of the attachment, it is stated, the silk or rayon can be wound on the bobbin in such a manner that it will not shell off.

In Fig. 1 is shown a side view of a bobbin giving an idea as to the movement of the guide wire during the course of a doff. *A* is the guide wire; *B* is the guide wire rod. In Fig. 2 is shown a side view of the quiller frame illustrating the method by which the curved motion is given to the

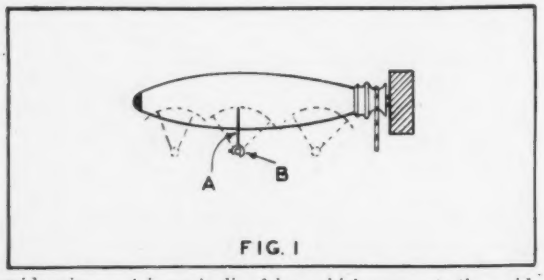

FIG. 1

guide wires. *A* is an inclined bar which supports the guide wire rods. This inclined bar is supported by the builder motion lifter rods *B*. There are several crank arms *C* that project upwardly and have their ends connected to a common bar member *D*. This bar is connected in a pivotal manner to the connecting rod *E*, which is connected pivotally to the gear *F*. This gear is driven from a gear connected by a chain drive to a gear fastened to the main drive shaft on the opposite end of the frame. The power for driving the machine is derived from the belt, *G*, which drives the split pulley *H*. The spindles are driven by 4 bands in the conventional manner from drums in the back.

The gradual raising of the frame which holds the guide wire rods is very much the same as in the ordinary quiller frame. In the ordinary quiller frame, the guide wire rods are not rotated but remain in a fixed position and are raised vertically while the spindles are being rotated. Using this attachment for quiller frames, the guide wires are rotated by the crank arms by means of the connecting rods. In this way the thread is lapped on the bobbins in such a manner as to make the machines adaptable for the winding of silk or rayon.

This patent was secured through Paul B. Eaton, patent attorney, 406 Independence Building, Charlotte, N. C.

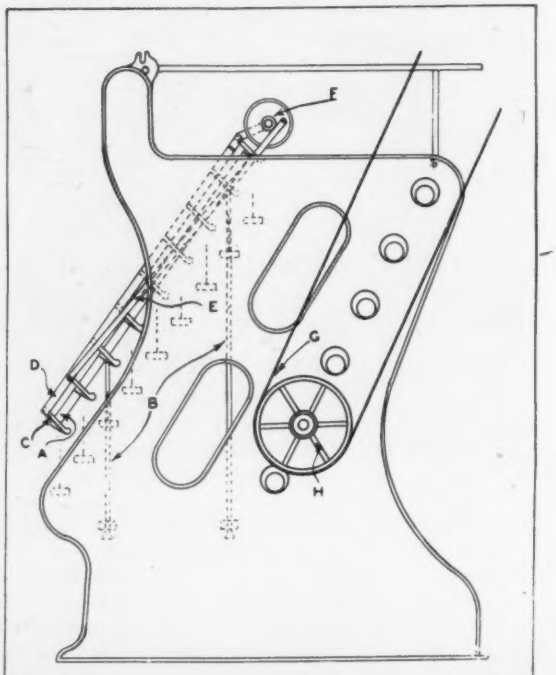

FIG 2

Mercerizing Cotton

This Article, Concluding the Series, Covers the Treatment of Piece Goods, Describing the Equipment Used

By William B. Nanson

MANY years since, it was found that if a cotton fabric was prevented from contracting during treatment with caustic soda and subsequent washing it acquired a silk like luster and that it gained an affinity for the substantive dyestuffs and tannin matters. It was proved also that the shrinkage was not in proportion to the strength of the lye used and that the maximum shrinkage is produced by a lye of about 45 degrees Twaddle. Above that if dry it decreases again. This easily supplied an explanation of the fact that cotton cloth after treatment under tension with caustic lye of 60 degrees to 70 degrees Twaddle is often torn on mercerizing machines at the first stage of washing. It had generally been assumed that a mercerizing agent, to produce a good luster on the fiber, must exert a shrinkage and swelling action. It is also necessary that the agent must also be capable of untwisting the naturally twisted fiber. This, coupled with the fact that most of our single cotton fibers are twisted partly to the right and partly to the left, several changes in the direction of the twist being noticeable in a single fiber, affords us a rational explanation of the production of luster in mercerizing.

As a result of the untwisting of these different twists during mercerization, under tension, during which operation the fibers are firmly held by the twist of the yarn, the original ribbon like twisted fiber becomes converted into a straight rod, which carries on its surface smooth elevations in the shape of rounded ridges, reflecting the light falling on them from any direction. Maximum luster, therefore, can only be obtained if the caustic soda is capable of producing shrinking, and untwisting of the fiber in a high degree.

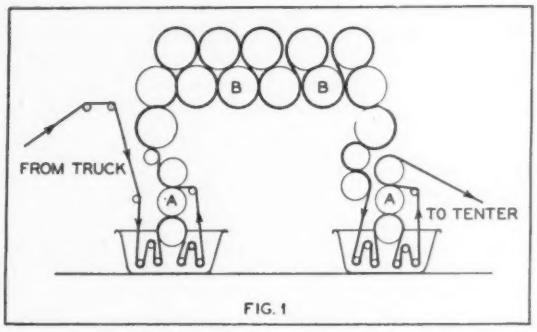

FIG. 1

In order to thoroughly mercerize the fibers the goods must be allowed to remain in contact with the soda at least for from one-half to one minute. Although it is the practice in some dyeing plants to allow the goods to remain for a considerable time after impregnation in contact with the soda lye and before stretching and washing, the results obtained are in no way superior to those obtained when working continuously. Uniform results in mercerizing can only be got at if the soda lye is kept at a uniform strength and temperature. Special refrigerating machines are frequently employed for cooling the soda lye.

Doubled yarns made of long-stapled Sea Island or Egyptian cotton give the most brilliant results in mercerizing, but good results can also be obtained on yarns spun from combed American cottons. Single yarns cannot be successfully mercerized on account of the twist being too weak to resist the shrinking of the fibers. The best results in mercerizing cotton fabrics are got on face cloths such as sateens, Italian linings, etc. The removal of all loose fibers from the surface of the goods by careful singeing leads to an increase of the luster of the mercerized goods.

Cotton fabrics are sometimes only scoured before mercerizing. More frequently the goods are mercerized after the first boil in the kier, or in some cases after they have been bleached, i.e., chemicked.

Description of Equipment Used.

Although quite a variety of machines have been invented and used for mercerizing cotton piece goods, machines in which the fabric after impregnation is stretched on a "clip" tenter are now chiefly employed. A complete mercerizing range consists of two padding mangles or two runs through one mangle, the tenter with washing arrangement, and the necessary washing, scouring and washing cisterns. In the padding mangle, the cloth is usually twice impregnated with the soda lye and well squeezed after each impregnation between cast iron and rubber bowls. The box containing the lye is often provided with an outer cavity to which ice may be supplied or through which refrigerated brine may be circulated in order to keep the lye at a low and uniform temperature. After the impregnation the cloth passes directly (usually) onto the tenter by which the edges are seized and held by two endless chains of clips which travel along each side of the tenter. The end of the tenter at which the cloth enters is tapered and thus the cloth is gradually stretched out to its gray width, after which the chains run parallel to the delivery end. While on the tenter the caustic soda is removed by showering hot water on the cloth. The economy of the recovery of the caustic being of importance, it is customary in order to get a wash water containing a high percentage of caustic soda, to conduct the washing on the counter current principle, or steam is better.

For this purpose three or more sets of spurt pipes are provided, clean hot water being introduced into the first set of pipes, which are placed nearest the delivery end of the machine, while the same water is then used successively in the other sets. The goods are ultimately released from the clips and passed through a number of tanks containing hot water and weak acid and through a washing machine.

An arrangement has been patented by means of which the soda lye is forced out of the cloth by blowing steam against it, which is a good thing for saving caustic soda.

In order that the soda lye can be used again, the wash waters are concentrated in multiple effect evaporators and treated with caustic lime to kill the carbonate of soda

formed by the action of the machine. This makes the lye caustic again. Until quite recently mercerization was only applied to fine long stapled goods such as Sea Island cottons, etc., but during the present times a great many goods composed of very inferior types of cottons are subjected to the mercerizing process, or something very similar, because the slight expense of mercerizing is fully made up by the increased affinity of the goods for the dyestuffs. This allows the dyer to use much less salt or Glauber's salt in making up his color baths. This is of course of the greatest importance to a dye house, as it is easier to dye some colors by a continuous process and simplifies much older methods.

This property of mercerized goods for absorbing coloring matters has been studied by many people. Thus the action of a beta-napthol solution on the two cotton fabrics mercerized and unmercerized, has been noted; it has been found that although mercerized goods take up nearly the same amount of dye as unmercerized goods, the subsequent treatment in diazotized paramitraniline gave much darker shades with the first or mercerized goods than with the latter or unmercerized stuff.

The same has been investigated regarding immedial blue and it was found that the mercerized goods took up about 40 per cent more dyestuff than unmercerized cloth. As regards aniline black the case was reversed, however, as the mercerized goods took up the least. This latter case is of great importance to dyers of aniline black and there are many of them who prefer the goods not mercerized as they take up the emeraldine lake more fully and easily.

Another thing that has been observed by most dyers is that if mercerized cotton is dyed after mercerizing and before drying it takes much less dyestuff to effect a given result than mercerized cotton does if dyed after mercerizing, ageing and again wetted out. This is quite important for it confirms the advantage of dyeing immediately after mercerizing without drying.

Mercerized cotton shows quite a difference from unmercerized cotton. If it is examined under the microscope the mercerized cotton appears to have lost, besides its cuticle, its characteristic cork-screw appearance while a central canal runs through it. This physical difference is not the only difference between the two for the mercerization of cotton goods also shows a lot of chemical reactions which are not found in ordinary cottons, and all of which go to prove that the mercerized material is differently constituted both chemically and physically than the unmercerized goods.

If the boiling out process is carried out on light cotton cloth goods with the ordinary methods on the kiers, it is, after washing, found necessary to open out the cloth from the rope form, in which it is boiled to full width. This may be done by means of the ordinary scutcher used in finishing plants. This may be done by fixing the scutcher above the mangle.

Heavy goods must be bleached or scoured at the full width to avoid all creases, and kept at full width through *all* processes. The point where the mercerizing takes place depends entirely on the kind of goods that are to be mercerized. Either of the three following methods are used:

(1) A thorough singeing is first given the goods, they are then wetted well in the mangle, batched up and mercerized all at full width, and without souring, they are then passed into the kier and boiled with caustic soda at one degree Twaddle for six or eight hours and are then fully bleached.

(2) The cloth is singed and wet out in diastafor and allowed to lie four hours or all night. Then it is washed into the first boil and boiled six or eight hours in two per cent of caustic soda in a kier, then washed in a washer, scutched through the mangle into batches or trucks and then mercerized as usual. It is then passed into the kier for the second boil and boiled for six or eight hours with 60 per cent of soda ash and 40 per cent of caustic soda, using 3 per cent in all. The goods may now be washed up if for dyeing, or, bleached if for bleaching in the usual manner.

(3) The cloth is thoroughly bleached and washed first, then it is scutched, thoroughly mangled and mercerized after in the usual manner.

The best way is to thoroughly scour first, then mercerize as usual. This is enough if for dyeing except for some of the lighter shades. If for finishing white it must be bleached fully after mercerizing; sometimes it requires boiling, but usually not.

The Operation of Scouring.

If dyeing blacks, khakis, browns, etc., bleaching is not always necessary. It is sufficient in these cases to scour the cloth; in fact, many goods require only wetting out before mercerizing. The goods are first run through a washing machine in warm water and lay wet in a pile for all night. They are then washed into a kier (high or low pressure) and boiled six or eight hours with three per cent (or 60 by 40) soda ash and caustic. The goods are then washed in a washing machine into a sour of 1½ or 2 degrees Twaddle. After lying two or three hours they are then washed up. The goods should lie in the kier and liquor four hours after boiling and must be covered up.

All heavy or pile goods such as moleskins, fustians, velveteens, corduroys, ducks, drills, etc., should be wet out at full width and diastafor should be used in place of water to wet them out, in this case the temperature should not be over 110 degrees F., diastafor is no good if run much hotter than this. Crabbing is a special scouring operation, it is good for the finish as it makes the fibers brighten. It is used for heavy goods and it runs the cloth at full width.

There are many mercerizing plants which take the cloth after mercerizing once or twice and allow it to lie some time before it is stretched and washed on the tenter. This gives us practically the same thing but takes longer. It is better, after scouring, to run the goods straight away as is done on some tenters as follows. I use their own words after the scouring and scutching:

After scouring and scutching as per the second method ito trucks or into batches on rolls, the goods are taken full width and run through two padding machines tandem, *A*, *A*, in Fig. 1. This gives a thorough impregnation of the caustic soda and allows the range to run from 60 to 90 yards per minute. The squeezing bowls of the mangle are made of cast iron middles with rubber covered top and bottom rolls and pressure is applied to them by means of screws and levers. The cloth goes to the first mangle which has a box below containing the caustic soda lye. The box has a cavity through which cold water, or refrigerated

(*Continued on page* 1207.)

With Liquid Caustic Soda,

"Delivered Cost"

Means delivered into your process

NOT long ago one of our representatives was discussing handling costs with a customer whose plant is so located that the delivered costs of solid and liquid caustic are exactly the same. This customer could see no economy in changing to 50% caustic liquor—until he discovered upon investigation that his handling cost on the solid material in drums was around 20 cents a hundred pounds or $4.00 a ton!

In comparing solid and liquid caustic soda, the important thing is the cost of each *delivered into your process.* To consider only works prices and freight rates is to overlook the greatest factor in favor of liquid caustic—the ease and economy of handling it in the plant. Contrast this with the handling of solid caustic—unloading many drums, transferring them to point of use, cutting them open, dissolving the solid caustic, disposing of the worthless, empty drums—at a cost ranging from $2.00 to $6.00 a ton. Is it any wonder that many large consumers prefer liquid caustic because of its great convenience, even where practically no saving is offered?

Mathieson has specialized in the distribution of caustic soda in liquid form and maintains at both Saltville and Niagara Falls plants a fleet of the latest type caustic liquor tank cars. Consumers who are interested in liquid caustic are invited to consult with the Mathieson technical staff as to approved methods of handling, storage, dilution, etc. Our Bulletin No. 270, "Liquid Caustic Soda", also contains much practical data of value to all those who use caustic soda in either liquid or solid form. Let us send you a copy of this valuable eight-page bulletin.

MATHIESON Industrial Chemicals

CAUSTIC SODA
LIQUID CHLORINE
BICARBONATE OF SODA
MODIFIED VIRGINIA SODA
SODA ASH
BLEACHING POWDER
ANHYDROUS AMMONIA
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CURRENT TOPICS

Need for Management

FIGURES made public by the United States Bureau of the Budget indicate an increase of about $400,000,000 in the cost of running the Federal Government during the next fiscal year. Postmaster General Harry S. New stated recently that his department will fall shy, by about $100,000,000 of meeting expenses during this fiscal year. Ten years after the war that was to end war, the Government is spending about $700,000,000 a year on the army and navy establishments or as much as all operations of the Government paid for with taxes cost prior to the war. On account of a war activity of only a little more than a year's length, about $400,000,000 a year is being spent for the relief of persons who suffered because of services rendered during the conflict. With a hundred or more qualified applicants appearing for practically every vacant government job, a general increase in wages was given Federal Government employees recently. A naval building program calling for the expenditure of a billion or more pends.

The Federal Government is usually thought of in campaigns as a mere agency for clearing issues and settling, or dealing with, problems that do not relate directly to the machinery of operations. This machinery is now so large and cumbrous and costly that it is a problem and a good deal of an issue in itself. Its management is about the hugest task in the world today.

To say that it as a whole is poorly managed is to state only an obvious truth. No business concern possibly could nor should survive under such management as characterizes most Federal Government activities. However judged, the returns from these activities are not commensurate with their cost. This isn't a question of statesmanship; it is one of mere management. And it is an important question in every household in the country, for everybody pays Federal taxes.

In the national campaign this year, it wouldn't be a bad idea for voters to give to the question of government a bit of thought of the kind they would exercise if acting as a stockholder in a corporation. Capacity for managing, or helping to manage, the vast Federal Government organization—even in a business sense the biggest one in the world—should be an equation in adjudging candidates for Congress as well as candidates for President. Such capacity is not incompatible with statesmanship.

Refreshing

IT is worthy of note, for the purpose of expressing a hope, that nearly all responsible attacks on and criticisms of either of the candidates for the Democratic and Republican parties for President have been accompanied by concessions of the honesty, courage and capability of each of the men. There are exceptions, and, sadly, most of them have arisen in quarters that should have been the last to yield them. The most reckless statements, and about the only ones impugning the character of either candidate, have come from the precincts of organized Christianity.

Rarely if ever has a big party candidate for President of the United States been regarded at the time or proved later to have been other than honest. The only one definitely so suspected was beaten on that score alone. The record as to Presidential honesty is a proof of American democracy. But all candidates, and, for that matter, all Presidents have not been praiseworthy for courage. And perhaps more often than otherwise neither the candidate nor the President has been the most capable man who might have been selected.

Now, it is a reckless person indeed who will say that either of the present candidates is lacking in any one of the three basic qualities by which Presidential timber should be judged. This doesn't mean that there are not grounds for criticising or opposing either of them. But all are non-personal grounds, having to do with views, temperaments and issues.

Yet many persons seem to think that this will be the worst "mud-slinging" campaign since pre-Civil War days. Examples set by some Christian clergymen of note whet these fears. But it is hoped that the fears will prove baseless. For it means a lot in the future of the country for both political parties, for once, to have passed over their saplings and small timber and put forth, in each instance, its biggest man for the Presidential job.

One trouble with American politics is that, except maybe in times of crises, big men are inclined to avoid campaign "mud" by steering clear of politics. The bigger they be as men the better can candidates be judged; for it is the big man who speaks out in clear and certain terms. He may be opposed rightfully for what he says and thinks, but he should be admired rather than abused for stating candidly what he thinks.

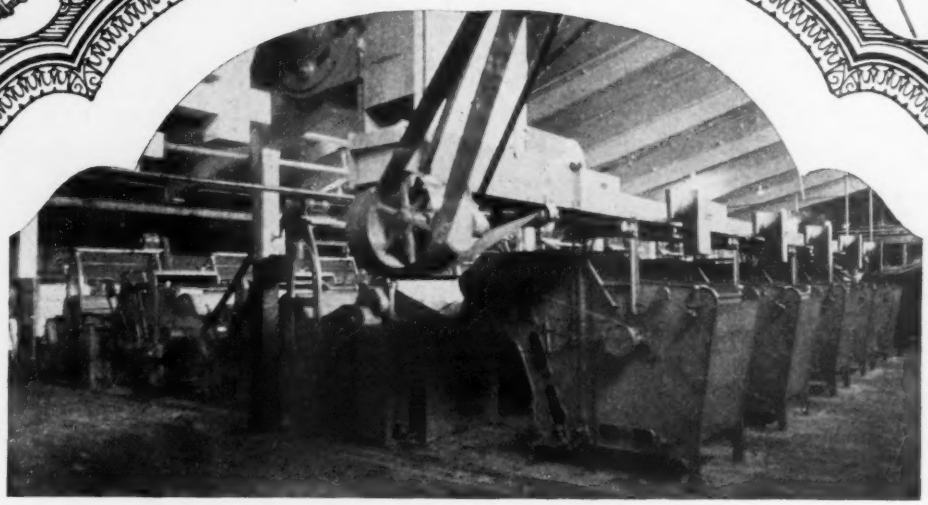
They Deserve Full Support

After the seasonal intermission during the Summer, the advent of Fall brings the active resumption of the discussion meetings conducted by the Southern Textile Association and similar organizations.

Within recent years the activities of these bodies have become recognized as an integral influence in improving manufacturing efficiency in mill operation—and it is entirely fitting that at this time mills should be especially urged to have their operating executives actively participate in these meetings.

With increasing frequency we learn of direct results of these meetings. Whether they start someone to investigating his roller covering bill (based on information developed at such a meeting); or to change the weights on his slasher squeeze rolls for better results—rarely does one of these meetings fail to start a mill man thinking about at least one phase of his job wherein improvement is possible.

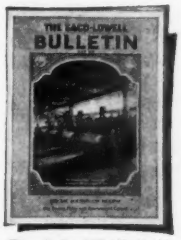
More and more the mill men are recognizing the possibilities of such discussions, and are participating more actively; and, quite naturally, the meetings are improving in value. Business and industry generally should support all such movements; and textile manufacturers will find in these meetings an especially potent opportunity.



Langley Mills Install Saco-Lowell's New One-Process Pickers

with Synchronized Control

THE Langley Mills, Langley, S. C., have changed their whole mill onto Saco-Lowell One-Process Picking. Five new One-Process Lappers have been installed, as illustrated above, and are now running night and day to the complete satisfaction of the mill.



The July "Bulletin" features picking throughout. Full of interesting facts, figures and news.

Complete details of this new machine, with synchronized control, are published in the July issue of the Saco-Lowell monthly "Bulletin." Watch for your copy. If you have not been in the habit of receiving copies regularly, write for this special edition and ask to have your name put on the mailing list.

SACO-LOWELL

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More Millions for Shipping Bureaucracy

UNLIMITED millions of public funds again have been dedicated to the restoration of the American merchant marine—which simply refuses to be restored under the pressing and ever widening thumb of Federal bureaucracy. Hundreds of American vessels are rotting away in idleness. Yet loans are to be made without stint for the promotion of new construction. With carrying rates at profitless levels, as they have been most of the time for seven years, the Government is to inject more demoralization by giving big operating subsidies that are called something else. Thus hundreds of millions are to follow billions that have already gone into the sea on behalf of bureaucratic meddling with shipping.

Yet the Jones-White act now being put into effect had the support of spokesmen for business who bitterly opposed, and properly, the McNary-Haugen farm relief bill. The "uneconomic" nature of the two bills differ only in degree.

With a large world and a huge American surplus of ships, a revolving loan fund of $250,000,000 for new construction is set up by the new law. Loans are to be made at nominal rates of interest, for less possibly than the money costs the Government. Cheap insurance also is to be provided. Loans may cover three-fourths of costs and may run for twenty years. Costs will be 50 to 100 per cent above corresponding ones abroad. The offsetting worth of the security will depend on the creation of artificial values by governmental fiat. This is essentially the principle involved in the McNary-Haugen farm relief bill. No wonder the McNary-Haugenites supported the shipping bill which was sponsored in the main by persons who held the farm relief bill to be "uneconomic", which it is. The McNary-Haugenites have seen that the Jones-White precedent is of record. One of the big party platforms cites it in connection with farm relief, and dodging it won't be easy when like schemes are brought forth on behalf of other industries in future.

Artificial values—for some ships—are to be maintained by "mail pay", merely a synonym for subsidy, granted on long contracts. Outright subsidy would have been more honest and have a better chance of succeeding. But it was agreed that the American public won't stand for the use of the word"subsidy", so it was granted in a round-a-bout way that expands and stiffens the bureaucratic thumb which has kept shipping from developing wholesomely under the American flag.

For selected lines this "mail pay" will be huge. In some cases it will amount probably to $100,000 a voyage. In some it may equal, for one voyage, the entire cost of vessels purchased from the Government. "Routes" for receiving it may be designated *ad lib*. The purpose ostensibly is to protect trade. Yet no authority having directly to do with trade is given a hand in administering the plan, whose direction is entrusted loosely to the Postoffice Department, the Navy Department and the Shipping Board. Trade isn't mentioned in the act.

The pretended purpose of the new, as with prior laws, is to bring about, by government aid, a secure and adequate merchant marine under the American flag. Towards this worthy purpose about $4,000,000,000 of public funds have been spent in the last dozen years. Yet the only effect has been merely a continuance of wasteful and futile government ownership and operation and to send self-respecting Americans abroad for ships to be operated under foreign flags. American-flag shipping has continued on the whole to decline.

There is little prospect that the new law will have a different effect, excepting perhaps temporarily. It may produce a passing appearance of revival of shipbuilding and will enhance the earnings of selected operating companies. But it will put non-subsidized shipping under greater difficulties than handicap it now. In the long run the new law merely will perpetuate government ownership. In fact, the act so admits. For it "recognizes" the necessity of "replacing" present government-owned vessels with new ships built and owned and operated by the Government, and provides even for adding to them. Yet more than 500 Government ships still are idle, many of them never having carried a pound of cargo.

What The Southern Mills Are Doing

ALABAMA Mills Company, Birmingham, Ala., is reported to have awarded contract to Curtis & Marble Co., Worcester, Mass., for $10,000 worth of cloth room machinery to be distributed among several of the mills they are building in Alabama.

H. H. Stewart, president and general manager of the Cloverdale Cotton Mills, Montgomery, Ala., has been appointed receiver for the mills. The bank as trustees asked the receiver to protect the interests of beneficiaries of a $150,000 mortgage held under a deed of trust.

The Buck Creek Cotton Mills, Siluria, Ala., are now installing 250 new looms for replacement purposes.

The Decatur Silk Mill, Decatur, Ala., have announced that they will spend $50,000 installing machinery in the plant and modernizing some of the old machinery. Work will start immediately and will probably be completed in three or four months.

Bemis Bag Company, which is erecting a plant for the manufacture of cotton products located at Talladega, Ala., will spend approximately $3,000,000 on the plant including the village. The work on this project is well under way.

A village of 50 modern houses has been completed by the Alabama Mills Company, at Greenville, Ala. Material is being received for the mill and warehouses. The foundations are under construction and it is expected that the plant will be ready for operation by January 1, 1929.

The Lowe Manufacturing Company has moved its headquarters from Greensboro, N. C., to Huntsville, Ala. All of the books and accounts of the corporation have been placed in the mill office.

Approximately 1,100,000 feet of timbers and groved planking was sold by the Long Leaf Yellow Pine Manufacturers Association of New Orleans, La., to be used in the construction of the two mills being erected at Guntersville and Albertville, Ala.

Sumter Rayon Mills, Americus, Ga., is announced as the name of the new rayon and silk underwear mill which has been established at Americus. The company will build a two-story plant 50 x 120 feet, it is expected that operations will commence about Oct. 1, 1928.

Thomaston Bleachery, Thomaston, Ga., is reported to be contemplating adding piece dyeing equipment for the dyeing of sheets.

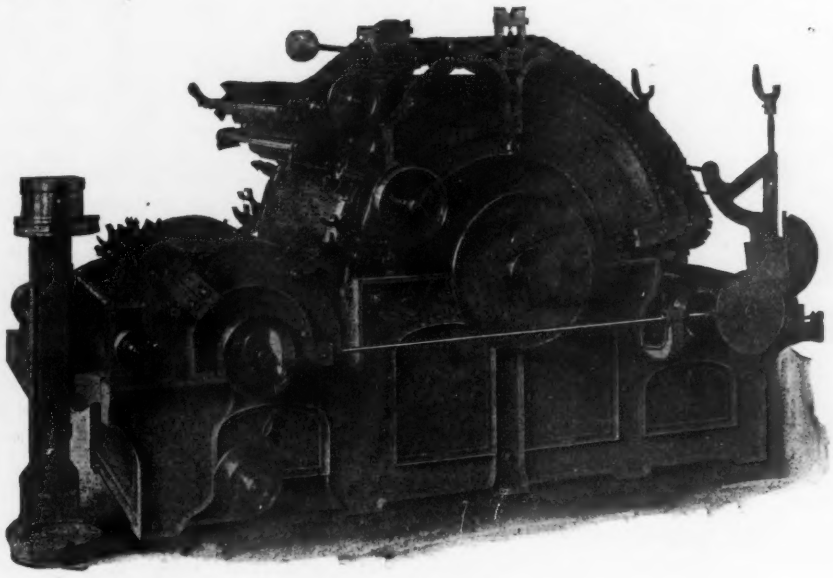
A contract has been signed by the Pepperton Cotton Mills, Jackson, Ga., and the city council to extend the town

H & B AMERICAN MACHINE CO.

Pawtucket, R. I.

Southern Office: 815 AtlantaTrust Co. Bldg., Atlanta, Ga.

COTTON MILL MACHINERY



Revolving Flat Card

OUR cards are extensively used, and have won for themselves a high reputation for the quality and quantity of work they will do, the small percentage of waste made and their durability and simplicity.

Amongst the many features and points of special merit embodied in the machines which it would pay you to investigate are:

The Rigid Bend, mathematically correct at all stages of wear of the wire.

Perfect concentricity of Flats to Cylinder.

Arrangement for adjusting Flats whereby accuracy to the thousandth part of an inch is obtained.

Adjustable Cylinder Pedestals and Bearings.

Better quality of yarn made from the same cotton, or equally good yarn made from cheaper cotton.

Special Bulletin sent on request.

water main to serve the plant and village of the mill.

The Tifton Cotton Mills, Tifton, Ga., will resume operations after being shut down for several months, during which time the company was placed in the hands of the receivers for reorganization. The business has been settled satisfactorily and J. H. Mayes has been made general manager and Mark Mayes has been made superintendent. Operations will be renewed at once.

Contracts aggregating approximately $1,000,000 have been awarded by the Southern Brighton Mills, Shannon, Ga., to the A. K. Adams Co., Atlanta, Ga., for the construction of a textile mill and three units of a warehouse. The contracts for the construction of the houses in the village will be awarded locally. The new plant will house the equipment of Allgood plant which is being moved from Passaic, N. J.

The Royston Manufacturing Co., Royston, Ga., will erect a mill building 74 x 400 feet and install 6,142 spindles on medium count yarns. J. M. Battson, of Lavonia, is interested.

The Southern Manufacturing Company, Athens, Ga., is installing 14 new Whitin cards and 60 new Draper looms. The company expects to add additional cards and looms

Contract has been awarded to the Walker Electric Co., for the electrifying of the Tifton Cotton Mills, Tifton, Ga.

Eastman Cotton Mills, Eastman, Ga., have been equipped with individual motor drives, this work having been completed by the Walker Electric Co.

Through the Spartanburg Office of Lockwood, Greene & Company, Inc., Engineers, contracts for the following items have been let for the Yarns Corporation of America, Spartanburg, S. C.; freight elevator, to Park Mfg. Co., Charlotte, N. C.; sprinkler system, to Grinnell Co., Charlotte, N. C.

The Enterprise Manufacturing Co., Coleridge, N. C., have completed their new mill and are moving the machinery from the old building into the new one. Additional new machinery has been purchased and is being installed in the new mill.

Pacific Mills, Lyman, S. C., have installed a Frigidaire fountain system for employees. The system, which consists of 14 units located throughout the mill, was installed by the Odom Tire & Battery Service, Spartanburg, S. C.

Through the Charlotte office of Lockwood, Greene & Co., Inc., Engineers, contract for the underground material for the Gaffney Mfg. Co., Gaffney, S. C., has been let to Grinnell Co., Charlotte, N. C.

Manetta Mills, Lando, S. C., are building a modern dye house and additions are being made to two large warehouses.

The Whitmire plant of the Aragon-Baldwin Cotton Mills, Inc., Chester, S. C., will erect a four story addition to its main plant. J. E. Sirrine & Company of Greenville, S. C., are the engineers.

Drayton Mills, Spartanburg, S. C., plan a new weave room to cost above $250,000.

Thirty looms will be installed at present in the first unit of the Lund Co., Inc., Rock Hill, S. C., and will be operated night and day.

Through the Charlotte offices of the Lockwood, Greene & Company, Inc., the following contracts have been awarded for the Saxon Mill School, Spartanburg, S. C.: C. M. Guest & Son, Anderson, S. C., will handle the construction work, Harrison-Wright Company, Charlotte, N. C., will install a complete lighting installation.

New England Mill Situation

AT FALL RIVER in the past month two mills, the Stafford and Troy, resumed operations after several weeks of idleness and are now running out the stock in process preparatory to closing for an indefinite period. The print cloth mills in that city are operating less than 25 per cent capacity while the fine goods mills are running to about 75 per cent capacity.

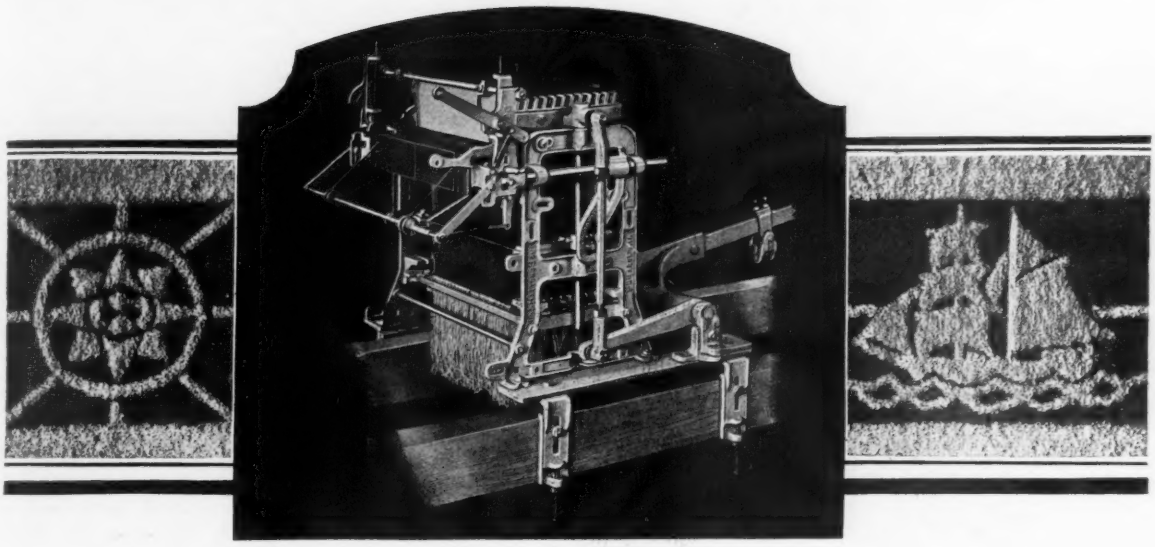
Studies are being made of the chief corporations in the city by Homer Loring who brought about a consolidation of the three largest banks there and when all the facts are in hand decisions will be arrived at that will determine the future of many existing plants. It is felt that at least a third of the spindleage in the city will be abandoned and that a large part of the remainder will be consolidated in various groups to be managed by centralized boards cooperating with the banks and those of the stockholders who care to invest in a new organization. At the present time nothing beyond a study of the situation is being made by the parties interested.

It is quite possible and some men say actually probable that many of the existing plants will continue to operate as usual and will benefit largely by the removal of weaker plants that force a market competition that is intolerable. While this appears to be a gloomy picture of the largest center of cotton goods production in the country there are some bright sides that are being mentioned to show that the passing of the city as a textile center is neither likely nor economical.

During the past few weeks the radical unionists who have done so much to cripple New Bedford made an onslaught on the American Printing Co., the Algonquin Printing Co., and the Lincoln Mills of Falls River. For a time they were successful in drawing from 200 to 300 employees, chiefly Portuguese who were easily influenced by the inflammatory speeches of the community strike leaders. Contrary to all precedent in Fall River one of the leading newspapers came out editorially and denounced the strike and the strikers and called upon the community to support the police and the corporations affected.

The police refused to issue permits for union parades or union meetings conducted by Weisbord, Reid, and other leaders who became prominent in the strike at Passaic, N. J., two years ago and who were active in the disorders at New Bedford. On the day following the strikes these leaders attempted to organize what they termed "peaceful picketing" at the gates of the corporations and the police descended upon them and made arrests of those who refused to move on.

When the complaints came before the district court and a full hearing was given the judge of the district court imposed severe sentences, among others being two of six months' imprisonment for each of the defendants together with a substantial fine and the imposition of heavy bail when an appeal was made. Similar action was taken on additional cases. The established textile unions of the city who have been recognized for years by manufacturers issued public statements urging all operatives to remain at their work and denouncing the communist strike leaders. The police continued unremitting on their insistence that no parading or picketing would be tolerated and within five



HALTON'S JACQUARD, MODEL 600
—A Simple Machine for Intricate Patterns

THE simplicity of the 600 Single Lift, Ess Motion Jacquard shown above, in relation to the extensive scope of its designing possibilities has brought it an unusual acceptance. It is used not only for weaving designs in towels, as pictured, but is equally suitable for designs in silk and upholstery. Model 400, Double Lift, Double Cylinder, Halton Jacquard also is used for designing with automatic looms where high speed is necessary.

Every Halton Jacquard is manufactured to render superior performance and to allow intricacy of design. Wherever COTTON, WOOL, or SILK manufacturers desire the best in Jacquards, they turn to Thomas Halton's Sons. Past performance guarantees future satisfaction.

Turkish Towel Mills where Halton Jacquards are giving satisfaction in performance and durability.

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Charlotte, N. C.

• A HALTON JACQUARD FOR EVERY DESIGN AND PURPOSE •

The Curtain Rises in Greenville on October 15th

It is superfluous to remind the southern mill man of the virtual necessity of visiting the bi-annual Southern Textile Exposition in Greenville, S. C. . He has from the beginning recognized its value, and importance.

At this time, however, it is appropriate to draw attention to the dates of this year's exhibition. The show will open on Monday, October 15th, and continue daily through Saturday, the 20th.

Exhibitors, too, are rapidly recognizing the importance of the show. The extra-ordinary demand for exhibit space has necessitated the building of a third annex in addition to the permanent structure alongside the main building.

Needless to say, each exhibitor will exercise every effort in making his display worth while. According to reports already current, there will be this year more new and revolutionary equipment, and refinements of existing process, in operation and on display than ever before.

days the corporations affected by the strike were running their mills as usual.

In the city the American Printing Co. has been running to capacity from the first of the year at a profit and this is also true of the Algonquin Printing Co. Other mills that continue to operate quite full are the King Philip, the Charlton, Bourna, Firestone, Lincoln, Pilgrim, Parker, Davis, and Sagamore. Other plants are operating various amounts ranging from 20 per cent to 40 per cent capacity but averaging at this time about one-fourth of the installed spindleage capable of producing print cloth yarns. The net results of the strong community resistance to the advent of the radicals in the city has been the inspiration of much more confidence among the capitalists who are studying the situation in the city with a view to bringing about reorganization on a more profitable basis.

The situation in New Bedford where 56 mills employing 26,000 operatives have been idle since April 16th on account of a strike has shown no change indicating an early resumption of operations. The State Board of Arbitration granted a public hearing to the unionists and the manufacturers for the purpose, it was stated, of placing the blame for the continued idleness. No decision was given. The Board had previously failed to induce the unions to consent to arbitration. A vote of the members of the unions showing a unanimous sentiment against settlement by that means. As the manufacturers were informed of the votes of the unions they considered it hopeless to try to force arbitration and consequently the only action open under the law to the State arbitration committee was to grant the hearing referred to.

Malcolm D. Whitman of the William Whitman Co., selling agents for the Nashawena and Nonquitt Mills of New Bedford, and a past President of the Association of Cotton Textile Merchants of New York, wrote a conciliatory review of the New Bedford strike situation as it appeared to him and it was published in a New York newspaper and in the New Bedford newspapers. A couple of days later this was followed by a caustic article written by Walter H. Langshaw, President of the Dartmouth Mill of New Bedford, which is not a member of the manufacturers' association there and which has been kept in operation all during the 18-week period of the strike. In this article he made a bitter attack upon many of the leading manufacturers.

Public sentiment as represented by the newspapers of the city appears to continue strongly in favor of the strikers and a flood of misinformation and misrepresentation continues to be poured out concerning New Bedford mills and their managers. Already several investors of the larger sort are recommending a liquidation of properties in which they are interested and at least six corporations through their directorates have considered the question of liquidation very seriously, the chief impulse in that direction being the lack of public interest in manufacturing plants.

The strike is affording political capital to metropolitan newspapers and it is doubtful if any textile center in the country has been more grossly maligned than New Bedford has been in the past few weeks. At this time it appears as if the difficulties will continue until the strikers have exhausted their funds and have ceased to be supported by many people who have no conception of the real causes at issue.

The Pepperell Manufacturing Co., at Biddeford, Maine have given notice of their intention to discontinue the operation of the old Massachusetts mill which they bought and operated in part at Lowell, Mass. The reason assigned for the abandonment is the inability to make a profit under Massachusetts taxation and a 48-hour law. It was a reduction of ten per cent in the wages of this Lowell plant by direction of the Pepperell Co. that led to the troubles following similar wage reductions in New Bedford and Fall River. Such machinery as may be found available or desirable is to be removed to the plant of the company at Biddeford where the manufacture of blankets will be undertaken. An exemption of taxation and lower tax rates imposed at Biddeford together with the privilege of running 54 hours weekly under Maine law are expected to permit operations at a profit.

The Androscoggin Mill stockholders who had voted to liquidate a few weeks ago rescinded the vote as the shares of those who attempted to force the liquidation were bought by other interests including representatives of the Central Maine Power Co. and Bliss, Fabyan & Co., of New York. Every possible assistance and encouragement was offered to the plant by the citizens of Lewiston, Me., where it is located. The York Manufacturing Co. is continuing operations on orders that were in hand when the proposition came before the directors for the appointment of a new selling agent in place of Smith, Hogg & Co. After this firm had given notice of liquidation itself the York directors appealed to it to continue until the products of the company are sold and until some policy of future operation is determined upon.

During the past month Rhode Island and Connecticut mills making fine and fancy goods and some other mills outside of New Bedford in New England have begun to receive moderate-sized orders on broadcloths, rayons, shirtings, and some other lines wanted for the Spring trade. As yet there has been no large buying as the market is only beginning to become set looking toward Spring 1929 business. Many of the prices quoted on plain combed goods are as low or lower than they were when the New Bedford strike began.

More rayon is being used in the cotton mills in the past month on fabrics for late Fall and early Spring distribution. Many new lines of bedspreads, draperies and fine sheer all-rayon dress fabrics are being prepared and a great quantity of multi-filament rayon is going into the new merchandise. The reduction in the prices of Celanese ranging from 50 cents to $1.00 a pound has brought this acetate fiber more nearly in line with values current on Viscose

We're in the Navy Now!

Announcement of the awards for the Navy Contract for Lubricating Oils has been made.

We didn't get it all. But we were awarded a large share of the items on the Atlantic and West Coasts—and all of the items for Oriental Ports.

It is a large contract. And it is important, too, in its reflection on the quality of our products, on our ability to deliver, and the completeness of the line of Texaco Lubricants.

Our oils will be in use on all types of vessels from big Dreadnaughts to little "Chasers," from Seaplanes to Submarines; on Turbines, Corliss Engines, Diesel motors, Airplane engines; on Pumps, on Ice Machines, on Line Shafting and, in short, on all the intricate variations of machinery and equipment employed in the operation of this huge unit of our National Defense.

There is a TEXACO Lubricant for Every Purpose

THE TEXAS COMPANY

Texaco Petroleum Products

17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES

yarns of the finer qualities and have already assured as large a consumption of Celanese as it will be possible to provide up to the end of the year.

Machinery concerns continue to operate at less than one-half capacity and have been receiving less new business recently. Mills are giving more attention to new opening machinery and to the renewal of spindles. They are also experimenting quite generally with the new forms of long draft spinning that are being offered by some of the machinery concerns.

The average capacity operation in finishing plants is about 50 per cent in New England. A very substantial part of the new work coming to hand is on rayon fabrics or fabrics of other chemical fibers. All of the corporation and job printers are very busy, the latter being offered more engraving work for the spring season than most of them can handle immediately. All things point toward another very large season in printed fabrics and another very light season on yarn dyed fancies including goods of the gingham type.

COTTON COMMENT

By H. & B. Beer--

New Orleans, August 16th, 1928

WHILE the trend of the cotton market continued downward during the past month, some wide fluctuations were experienced during the period, values having bulged sharply as result of the government's first crop forecast of the season having been about 500,000 bales smaller than generally expected—14,291,00 bales, as per report of August 8th, covering returns as of August 1st. However, general liquidation followed after the issuance of the official crop forecast, influenced by the impression in some quarters, especially in Europe, that the crop may have been underestimated, values continuing to decline until prices were nearly 3 1/3 cents lower than in the middle of July, and about $24 per bale lower compared with this year's "peak" prices.

Of late, however, private crop accounts have been generally less favorable as a result of recent damaging rains in the South Atlantic States, and reports of shedding and increase of weevil in the central and western portions of the belt, values recovering somewhat more than $5 per bale in consequence, net results for the month showing a depreciation in values of about $11.75 per bale.

Secretary Hester, in his annual cotton report, made consumption by the world of American cotton last season, including linters, 15,838,000 bales against 17,368,000 the previous season, and made the world's carry-over of American cotton at the close of last season, July 31st, including linters, 5,298,000 bales versus 7,298,000 last year. Consumption was smaller and the carry-over was larger than generally expected, developments which weighed against the market.

However, the fact remained that this year's carry-over was 2,000,000 bales less than last year, and as the government's crop forecast was 14,291,000 bales, which, plus the carry-over, linters, etc., indicated a total supply for this season of only about 20,589,000 bales compared with 21,-204,000 last season, which showed the necessity of producing a moderately large crop for this season. This is an important feature of the situation since the average price of middling for the belt last season was 19.72 cents per pound.

One favorable feature of the growing crop situation is that fruiting is reported generally satisfactory, which under ordinary conditions would promise a good crop, but the recent damaging rains in the eastern belt, and late reports of extensive shedding and increase of boll weevil, have given cause for apprehension as to the future progress of the growing crop.

GOVERNMENT REPORT

	This year	Last year
Indicated crop, August 1st	14,291,000	12,955,000
Indicated yield per acre, Aug. 1, lbs.	152.2	154.5
Condition of crop, August 1st	67.9	69.5
Ginned to August 1st	87,888	162,283

TOTAL AVERAGE RAINFALL IN TEXAS

Inches—Year—	1928	1927	1926	Normal
For July	2.71	2.75	3.87	2.61
October 1 to July 31	22.91	27.70	31.43	25.61

Not only is the total average rainfall in Texas since last October less than last year when the state produced, in 500-pound bales, 4,356,000, but it is much less than in the big crop year of 1926 when the state made 5,631,000 bales. Strange to say, however, the general impression is that Texas is good for at least 5,000,000 bales this year, as the only section in need of moisture at present is South Texas where the yield is disappointing.

CENSUS REPORT

United States— Bales— Season—	1927-28	1926-27
Consumption, inc. linters, July	502,000	640,000
Consumption, 12 months, inc. linters	7,590,000	7,996,000
Mill stocks, July 31st	1,007,000	1,405,000
Stocks in public storage, July 31st	1,190,000	1,823,000
Total stock, mills and public storage	2,197,000	3,228,000
Active spindles during July	28,228,000	32,324,000

As noted, mill stocks at the close of July were much smaller than on corresponding date last year, and the same applies to stocks in public storage. In addition the growing crop is late in maturing in the early producing districts, which make the available scant for the present.

Because of this year's large acreage—46,695,000 acres planted versus 41,905,000 last year, an increase of 11.4 per cent—and a greater use of fertilizer than last year, and the general impression that the boll weevil will not be as destructive as in 1927, hope is entertained by many people that a good crop will be made this year despite the late start and poor stands in early season.

On the other hand there are those who believe that deterioration has set in, that boll weevils will increase and become more destructive laten on, and as the crop is late and generally spotted, and much fertilizer lost by washing rains, chances are in favor, they think, of a small crop, especially in event of an early killing frost.

Truscon Issues Book on Steel Doors.

Truscon Steel Co., Youngstown, Ohio, has published an interesting book, known as Catalog No. 110, covering "Truscon Copper Alloy Steel Doors," and describing and giving specifications for doors for different uses, applications of which are illustrated.

Kaumagraph Moves Headquarters.

The Kaumagraph Company, manufacturers of Kaumagraph dry transfers and Kaumagraph lithography, have moved to new and considerably larger quarters in the new Graphic Arts Building at Varick and West Houston Street, New York. The Kaumagraph Company will occupy the entire third floor and part of the fourth floor, giving a total floor space of 50,000 square feet.

Why not make some money in the TEXTILE BUSINESS?

PEDALING the old high-wheeler would not get you very far today. Neither does tying up end-breaks, starting up frames and all the other things that slow down production and cheat you on regain, when you use an old-fashioned humidifying system.

Many mills have modernized such equipment with immediate profit.

Without cost or obligation to you, our experts will investigate humidifying conditions in your mill and give you a complete written report of their findings. (The expense is ours. The findings all yours to do with as you see fit. When diagnosis is free, why continue to wonder what's the matter?)

This newly designed Amco Humidity Contro automatically regulates and controls humidity in Textile and other mills without using wet or dry bulb actuated devices.

It is not an expense, but a sound investment to install modern Amco humidifiers and the remarkable Amco Control. The money savings from improved air conditions return the initial cost in a short time—often in a few months.

Wrong air conditions in a mill are like disease in the human body. They undermine the whole structure. Call for an Amco "Air Doctor" today and let him tell you what's the matter. More and better regulated humidity will often change red figures to black. Let us prescribe for you now!

AMERICAN MOISTENING CO.

Humidifying Devices

Air Doctors Since 1888

EXECUTIVE OFFICES

25 West Exchange Street,
Providence, R. I.

SALES OFFICES

Boston, Mass. Atlanta, Ga.
Charlotte, N. C. Greenville, S. C.

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

At the left, L. L. Brown, who is manager of the new mill being erected at Malvern, Arkansas, by the International Shoe Company. Mr. Brown, formerly at Clifton, S. C., is vice-president of the Southern Textile Association, and was formerly chairman of its division of weaving discussion.

Right, Gordon A. Johnstone, one of the popular operating executives of the South, who recently resigned as agent of the Manville-Jenckes Co., Gastonia, N. C. Mr. Johnstone formerly was agent of the Winnsboro Mills, Winnsboro, S. C.

J. H. MAYES, who for many years has been vice-president and general manager of the Fitzgerald Cotton Mills, Fitzgerald, Ga., has been made general manager of the Tifton Cotton Mills, Tifton, Ga., in addition to his duties as Fitzgerald.

MARK MAYES, former superintendent of the Fitzgerald Cotton Mills, Fitzgerald, Ga., has resigned to become superintendent of the Tifton Cotton Mills, Tifton, Ga.

JOHN F. SCOTT has been made superintendent of the Fitzgerald Cotton Mills, Fitzgerald, Ga.

G. W. LLOYD has been appointed superintendent of the Slane Hosiery Mills, High Point, N. C. He succeeds B. C. Freeland, who recently resigned.

F. D. WEBSTER is now superintendent of the West Knitting Co., Wadesboro, N. C.

F. L. HOLLAND now holds the position of superintendent of the United Mill, Mortimer, N. C. He succeeded J. T. Jordan.

P. A. CARPENTER has accepted the superintendency of the Steele Cotton Mills, Lenoir, N. C. He succeeds J. P. Chester, who recently tendered his resignation.

H. C. BEATTIE, formerly associated with the W. E. Mason Cotton Co., Greenville, S. C., has resigned and opened his own cotton office in Greenville, S. C.

T. R. SOSEBEE has become assistant superintendent of the Banning Cotton Mills, Banning, Ga., and E. J. Walden has been made overseer of carding and spinning.

T. B. RECTOR, overseer of the cloth room department of the Consolidated Textile Corp., Pelham, Ga., has resigned on account of ill health.

MORRIS PHINNEY, for several months associated with Rayon Institute as textile specialist, has opened a new district of the American Glanzstoff Corporation with offices in the Hospital Trust Building, Providence, R. I.

W. H. HAMES has been made overseer of carding at the Sauquoit Spinning Co., Gadsden, Ala. Mr. Hames was formerly overseer of carding at the Anchor Duck Mills, Rome, Ga.

W. N. PATE, formerly of Laurel Hill, N. C., is now superintendent of the carding department of the Great Falls Manufacturing Co., Rockingham, N. C.

CLARK H. FOSTER, who for more than twenty years has been general manager of the Tolhurst Machine Works, Troy, N. Y., has resigned. His successor is T. A. Bryson, who has for fifteen years been chief engineer of the plant.

K. B. COOK, of Pawtucket, R. I., has been made general manager of the Loray division of the Manville-Jenckes Mills, Gastonia, N. C.

J. F. LONG, formerly superintendent of the Ninety-Six Cotton Mills, Ninety-Six, S. C., has accepted a similar position at the Werthan-Morgan-Hamilton Bag Co., Nashville, Tenn.

F. W. STRAIT has been promoted from overseer of spinning to superintendent of the Cutter Manufacturing Company, Rock Hill, S. C., formerly the Hamilton-Carhartt Mills.

B. E. DICKERSON has been promoted from designer to superintendent of the Stevens Manufacturing Company, Burlington, N. C.

C. B. WALL overseer of carding at the Social Circle Cotton Mills, Social Circle, Ga., has taken charge of the spinning also.

N. B. ODELL has resigned as overseer of cloth room at the Alamance Novelty Mills, Burlington, N. C.

H. C. HARDEE, formerly with the El Paso Cotton Mills, El Paso, Texas, has been appointed superintendent of the Texas Gauze Mills, New Braunfels, Texas.

W. A. EASTRIDGE, formerly with the Manville-Jenckes Mills, Gastonia, N. C., will be overseer of carding and spinning at the Winfield plant of the Alabama Mills Company, Winfield, Ala.

W. W. SMITH, formerly of Kinston, N. C., is now overseer of carding at the Burlington Cotton Mills, Inc., Burlington, N. C.

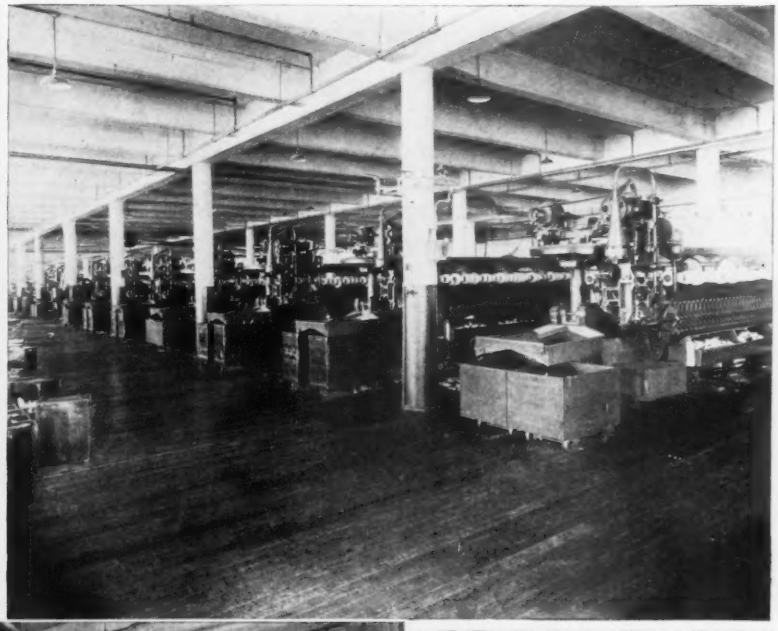
F. M. WILLIAMS has been made assistant designer of the Burlington Cotton Mills, Inc., Burlington, N. C.

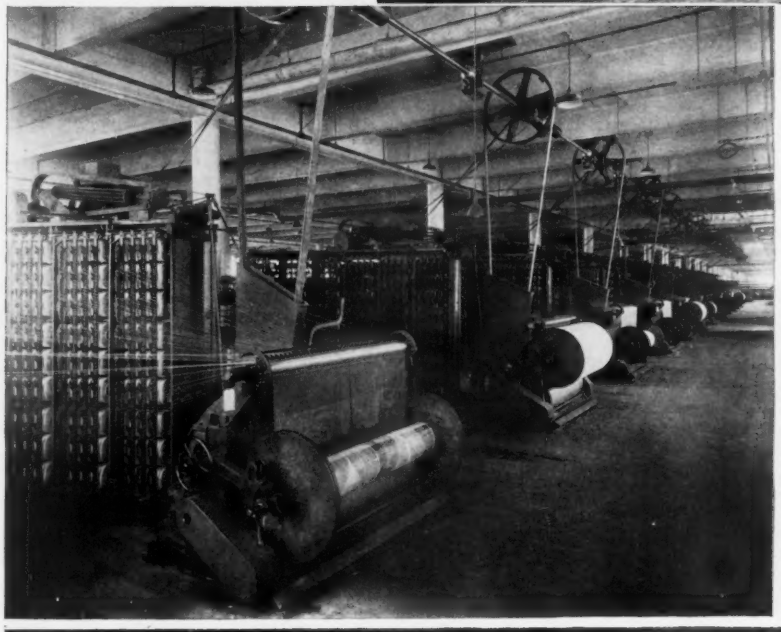
J. H. JACUMIN has been made overseer of carding at the Broad River Mills, Blacksburg, S. C.

H. O. CARAWAY is now assistant overseer of spinning at the Thomaston Cotton Mill No. 3, Thomaston, Ga. It was erroneously stated in the August issue that Mr. Caraway had been made second hand.

"NAUMKEAG"

THE Naumkeag Steam Cotton Company of Salem, Mass., has found a way to improve its product and decrease costs. This mill last year turned out over thirty-four million yards of Pequot sheeting. One of New England's outstanding plants, it has one hundred and sixty-five thousand spindles and four thousand looms.





THE Barber-Colman modern method of *automatic* spooling and *high-speed* warping may be the means of helping *you* to save *time* and *money* in a way similar to this mill.

May we consider your problem?

THE photographs reproduced here show "Naumkeag's" fine installation of 13 Automatic Spoolers and 12 High-Speed Warpers.

BARBER-COLMAN COMPANY

GENERAL OFFICES AND PLANT

ROCKFORD, ILL., U. S. A.

FRAMINGHAM, MASS. GREENVILLE, S. C.

U S Universal Cones Meet This Test

U S PRODUCTS

include all kinds of Cones, Rolls, Tubes, Payne Winder or Bottle Bobbins, Warper Shell Rolls, Balling Spools, Swifts, and Swift Arms; in fact, everything in wood for Winders and Ball Warpers, in addition to every kind of Bobbin, Shuttle and Spool.

U S Magazine Creel Cones for the Universal High-Speed Warping System were developed especially for the Universal Winding Company. These cones are uniform in length and diameter, the taper is exact, and a special U S finish is applied just right to pick up an end. At the same time, the finest cotton yarns and rayon can be run on and off without damage.

Wood tubes or cones out of round or of various lengths, are a nuisance. Look yours over and decide now to let U S make your next lot.

P. S. We keep standard Foster tubes 6⅞" x 1 1/16" in stock.

U S BOBBIN & SHUTTLE CO.

PROVIDENCE, R. I.

GREENVILLE, S. C. HIGH POINT, N. C. PHILADELPHIA, PA. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

U S salesmen are specialists on bobbins, spools and shuttles. Order direct from U S for real helpful and understanding service

AN OLD TIMER SAYS

In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

"GOODNESS, Jim, it is almost 9:00 o'clock. If we don't get out of this slasher room we won't get half through your mill today."

"Good enough, Old-Timer, let's go, but there are several things I haven't shown you, so if we have time we will double back here this afternoon. . . ."

"That seems to be a pretty good man you have in the slasher and tie-in room, Jim."

"Yes, he really is, Old-Timer. You know, he has the good quality of being able not to lose his temper when the boss weavers come for him to look at bad work. In fact, he seems to realize that bad work shown him is for his own good and for the good of the job. He often goes out into the weave room and looks over the warps for loose ends and bad selvages when he is not asked to. Then when he is shown his bad work, he never tries to pass the buck."

YOU will remember that "Old-Timer" has paid another visit to his friend Jim's mill, and in the July issue, we left the two of them in the slasher room discussing things there. The accompanying "Old-Timer" letter takes up the account again at the point where it left off in July, and begins, as will be noted, with "Old-Timer" suggesting that they leave the slasher room. They get, eventually, into the spinning room, and the next installment will find them in the card room, where Jim "puts one over" on "Old-Timer".—The Editor.

"Well, Jim, it is a pity that more overseers do not have those qualities. That is why more good overseers do not get to be superintendents. They are forever trying to pass the buck. Some men don't stop to think that it is just as important to be a good *follower* as a good *leader*. To illustrate, you know Mr. X, a man I employed about nine years ago. Well, he was already a good overseer, and he knew he was a good overseer, but when I had a bigger job for him he fell right into line, so to speak, and has made the best *pupil* I believe I have ever had. You hear many men claim that you can't teach an old dog new tricks. I'll admit that is true with *some* old dogs, but not all of them. This man X for example was about 38 when he came to me, but now he is a successful superintendent, and he has carried out my ideas and my teachings, I think sometimes, really better than I would have done myself. For example, I explain to him the value of using a note book. . . ."

"Yes, I remember you had an article in COTTON about that, Old-Timer."

"Well, bless my life, if that bird doesn't use his note book as persistently as an old hen clucks to her little chicks. It has gotten to be second nature with him. When his seconds go up a little he is right in the cloth room looking at every cut of seconds *himself*. He is continually getting up monthly and quarterly production reports and comparing them with former reports to see where he can make a little improvement here or there or catch a style of goods that has fallen behind a little. He is a wonderful detail man: he knows at all times just what his carding or spinning or spooling or weaving should do, and he knows when it doesn't come right up to his standard. Then he gets in there with the overseer and helps him pull it up."

"That's certainly a good idea."

"You know, Jim, the problem of finding competent men, is growing more pronounced every year, and although we have many worthy overseers who could be promoted, the majority of them will not make good *pupils*. They will not follow the teachings of the man over them, because most of them are too darn high-tempered. *It is simply impossible to make a $5,000 man out of a $3,000 a year man by simply raising his salary.* That is why we have so few *leaders*, Jim. You know, when you were grinding cards and would come around to my house at night just to have someone to talk to; you didn't realize that I was trying to make an overseer out of you by telling you all of my experiences—but the first thing I knew you were profiting by my mistakes, you were listening to what I said, and you made good. You were a good *pupil*, Jim, like X I am telling you about, and I will stake my reputation (if I have any) that both you and X will continue in the line of promotion for several years to come, because, like I told you several years ago, *there are ten good jobs where there is one good man to fill them.*"

"Thanks, Old Timer, that's mighty encouraging."

"As I said a few minutes ago, Jim, very few people ever learn how to follow. What I mean by that is, they don't know how to cooperate, they can't work with the other overseers, or if a superintendent, he can't cooperate with the office or with the president. Some of the best men I know are sadly lacking in this quality. They are good leaders, but poor followers; therefore, they stay where they are when the men over them are anxious to do more for them if they could only wake up to that fact. . . .

"Looks like your spinning is running nicely, Jim. I like

An Exasperated Superintendent *Revolutionized an Industry!*

TWENTY-FIVE years ago we were making transmission belt . . . as good as any belt that was on the market. We had hundreds of satisfied customers. One belt user, however, could not be satisfied.

In final desperation he came to us. "Make me a belt" he demanded, "the best that can be made, regardless of cost."

To satisfy him we made a special belt. It was away out of proportion with belts of that time. The cost was prohibitive. We shipped the belt and thought we had lost a customer.

A while later he ordered the same kind of belt for another drive. He told his friends about the belt and orders began to arrive. It was an instant success. We called it Condor Belt—the Original Red Friction Surface Belt. We learned that there was a market for a belt of such high quality.

Created merely to fill an emergency, Condor Belt became then . . . as it is today, the standard of belt comparison.

Condor BELT

THE MANHATTAN RUBBER MANUFACTURING CO.

Executive Offices and Factories : : : PASSAIC, NEW JERSEY

Branches in the Principal Cities

to see the scavenger rolls all in good shape like you have yours."

"Yes, Old-Timer, we make our scavenger rolls as long as the stands will admit, and we are sure to have the pins tapered so that a thread lap will not get on the pin and cause the spinner to take extra time in getting it off. Then you notice in some mills the scavenger roll has enough space (because it is too short) next to the stand to let cotton get wound around the end of the roll and stop the scavenger roll. Then you have several more ends down if the spinner is busy and does not get there soon enough. These little things don't show up much as long as the work is running *well,* because the spinner passes around so often, but when the work is running badly and it takes the spinner about three times as long to get around, they *do* show up and keep the spinner bunged up."

In the Spinning Room.

"Where did you get that guide wire, Jim? I believe that's the best one I ever saw."

"It is a good one, Old-Timer. You will notice it saves the spinner one complete motion in putting up an end and in the run of a day that counts up." (I will be glad to send a sample of this guide wire to any reader upon request.)

"Then we found our top roll bill going up and up, Old-Timer, and after doing all we could to save every roller possible, it was still too high. Well, we finally discovered that the roving traverse on most of our frames had worn to where the roving was only traversing a little over half the length of the roll, so we immediately worked them all over and now our rolls are lasting more than twice as long as they were."

"Good, Jim, I must make a note of that so I will not forget to look at mine when I go back home. It sure is the little things, isn't it, Jim?"

"Yes, Old-Timer, don't you remember that long letter you wrote me about little things? (Published in the September, 1926, issue of COTTON.) Well, here it is. I take it out of my desk every few months and read it as I go through the mill, and I have never yet failed to find something that I could improve upon to help my job."

"Bully for you, Jim. That's what I call a good *pupil.* Of course you also worked over the roving traverse on your fly frames, too, I suppose."

"Yes, we did, but there is something there I am not going to tell you, Old-Timer."

"Why not?"

"Well, when you go back home and start working over your roving traverses on speeders, intermediates and slubbers, you will find out. At any rate, if you run into any trouble in getting the full stroke on your roving traverses, let me know and I will try to help you out."

"How do you keep your weight levers all the same height, Jim?"

"We set them, Old-Timer."

"Never mind, now, don't try to get smart. What I mean is, what is your system of keeping them in such uniform shape?"

"Well, we simply have a little block of wood for a gauge, and the overseer takes it along with him when he is looking over weight levers to see that they all clear the gauge. Of course, each section man has a similar gauge."

"You mean that the overseer goes over the whole room looking at nothing but weight levers?"

"Yes, that is our system, and we have found that it is better, that is, we get better results by inspecting only one thing at a time. Of course the overseer does not put the gauge on every weight lever. That would take him a week. He merely looks at them, and if one doesn't look like it is set correctly, he slips the gauge under to see. If it is too low or very much too high, he puts a chalk mark on the guide board and the section man comes along and adjusts that lever."

"I notice you say *too* low, or *very much too* high. Why do you make the difference, Jim?"

"Well, a lever a little too high does not change the weight on the roll as much as a weight too low, therefore, unless it is very much too high, we do not have the section man change it."

"How did you find that out?"

"Well, I will have to own up, Old-Timer. I don't know whether that is a fact or not and I have been intending to get one of these textile graduates to figure it out for me. But I do know this: that if your weight levers and stirrups get worn badly, you will have more uneven work. I have seen them where you could take the weight off and the end would run right on for several minutes before it would come down, because the lever and stirrup had worn such a notch they were practically locked."

"Does your overseer look over his frames for other things, too?"

"You bet your life he does!"

"Well, how does he know what to look over and when to do it?"

"Well, we have an inspection book, and enter on that list the things we have found from experience need attention and how often they need it. We require the overseer to spend thirty minutes every day in looking over something. Then he records it in this book with the date which of course shows us at all times just where we stand with our inspection. For example, see here: he has fire pails entered as one item, and you see he has looked at them every Friday. That is not much trouble. After he puts on his time every day he will not leave the desk until he looks at this inspection book. If it is Friday, he knows the oilers are supposed to fill up fire pails Friday morning, so he steps out into the room, looks at a few pails to see if they have had attention, goes back to the book and marks Fire Pails in by putting the date under it."

"Well, Jim, I see there is no danger of the insurance man ever finding your fire pails empty."

"No, Old-Timer, and there is no danger of my boss ever finding my job run down, either, because we have entered every important item in this record book, which should have attention by the overseer, and he therefore does not forget them. They get attention at the proper time."

[**In the next installment, "Old-Timer" and Jim will finish in the spinning room and get into the card room, where some interesting conversation takes place.**]

Some New National Colors.

The National Aniline & Chemical Co., 40 Rector St., New York City, has introduced a new acid black under the name of National Buffalo Black GRF Conc. It is claimed by the makers to be exceptionally fast to light, producing a color that will not bronze even when dyed very heavy, being best dyed with Glauber's salt and sulphuric acid. It is well suited for the dyeing of silk and wool and stains rayon and cotton only slightly, it is stated.

The Dodge-Timken grease seal is indestructible. It cannot absorb grease, char and become useless. It is therefore positive insurance against grease leakage and damage to goods in process.

This bearing was designed by engineers who knew the textile operator's problem—it has filled a need and proved its efficiency in many leading mills.

The Dodge-Timken Hanger bearing is rugged and economical. Greasing once every six months is all that is required and this means low maintenance.

We will be glad to send interesting bulletins and complete information upon request.

DODGE
MISHAWAKA
TIMKEN
ROLLER HANGER BEARING

DODGE MANUFACTURING CORPORATION
MISHAWAKA, INDIANA

Power Transmission—Material Handling—Special Machinery

Single-Process Picking With Synchronized Control

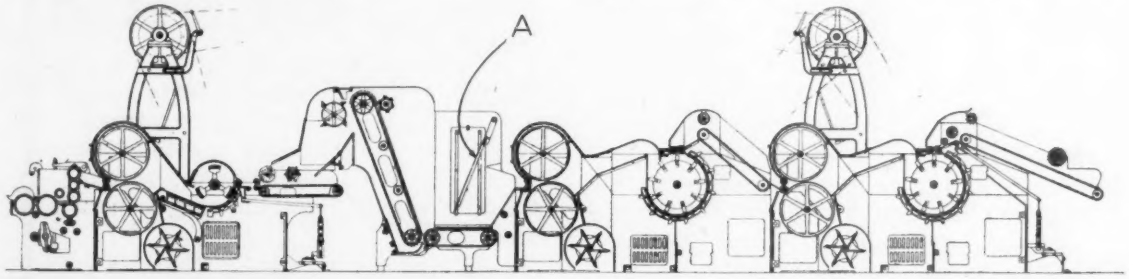
THE story of the development of one-process picking by the Saco-Lowell Shops is interestingly told in the July issue of the company's *Bulletin*. The description is based mainly upon the installation of five of these units at the Langley Mills, Langley, S. C., which have changed the whole plant to this new system. Because of the interest current regarding this new method of picking, by which the finisher picker is omitted and the breaker lap is used on the card, the following information concerning this machine, its construction and operation, is taken from the *Bulletin* description.

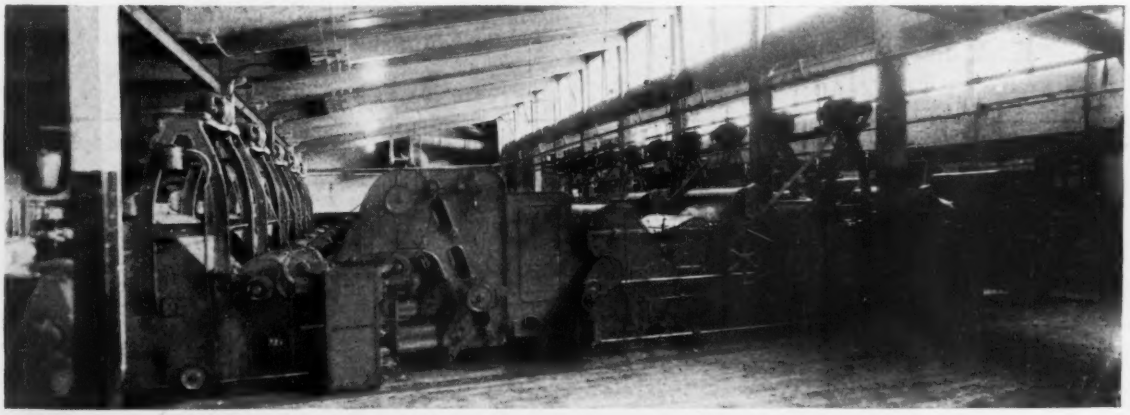
The first experiment was made up of various sections of existing machinery—the object being to retain the equivalent of doublings and the uniformity of lap produced by a one-beater finisher; a feeder was introduced between the first two Buckley sections and the last blade section, with eveners on the first and last sections. The theory was that sufficient cleaning could be done in the opener sections and a rough evening accomplished which would deliver a sheet within five per cent of constant to a feeder, which would then provide a certain amount of mixing as a substitute for the ordinary blending on the finisher apron; at the same time giving a constant feed to a one-beater lapper, because of the constant level of the cotton in the hopper.

However, it is explained, in actual practice it was found that the first evener had a tendency to run steadily light or heavy, causing a variation in the level of stock; it was also found that an adjustment of the final evener required an adjustment of the first evener, but not always in the same proportion nor the same direction. It was decided to disconnect the pedals from the cone frame of the first evener, insert a rake in the intermediate hopper, and through suitable linkage to connect this rake to the belt shipper of the cone frame; to make the control of the stock level in the intermediate hopper automatic, as any variation would be compensated for by a variation in the feed of the first feeder and feed rolls. Further, the rolling action of the stock against the rake would break up any tendency to form into a lap, aiding in giving the desired effect necessary for proper blending. This resulted in a synchronization of the entire machine, which is emphasized as an important feature.

The machine as developed, and shown in operation at the Langley Mills in the accompanying photograph, is explained in the cross-section view herewith. The whole machine is made up of the following, from right to left in the sketch: automatic feeder (not shown); 24-inch Buckley beater; screen section; another 24-inch Buckley beater; another screen section; intermediate feeder; 16-inch beater; screen section; and calender section.

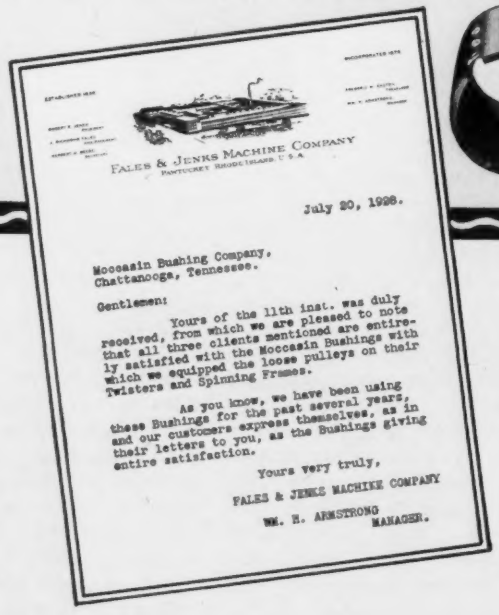
As explained, the pedals of the first evener were disconnected from the cone frame, and a rake A inserted in the intermediate hopper, which is connected to the belt shifter of the first evener. As the level of the stock in the intermediate hopper varies one way or the other, the action of the rake shifts the belt on the cone frame (not shown) and this in turn either speeds or slows the delivery of the stock to the first beater, thus compensating for any change in the level in the intermediate hopper. In other words, the rate of feeding stock to the first beater is regulated, not by the amount that passes through the feed rolls, as is customary in the old-style machine, but instead is regulated by the amount of stock in the intermediate hopper. It is pointed out that the stock being constantly level in the





A View of the Installation of Five One-Process Pickers Made at the Langley Mill, Langley, S. C., by the Saco-Lowell Shops. The Sectional View Shows the Construction of the Equipment.

Fales and Jenks Company Wins Satisfied Clients by Adopting Moccasin Bushings



FALES & JENKS MACHINE COMPANY
PAWTUCKET, RHODE ISLAND, U.S.A.

July 20, 1928.

Moccasin Bushing Company,
Chattanooga, Tennessee.

Gentlemen:

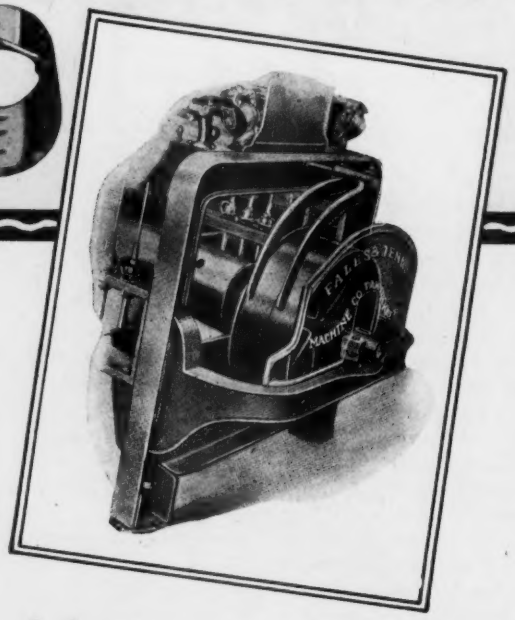
Yours of the 11th inst. was duly received, from which we are pleased to note that all three clients mentioned are entirely satisfied with the Moccasin Bushings with which we equipped the loose pulleys on their Twisters and Spinning Frames.

As you know, we have been using these Bushings for the past several years, and our customers express themselves, as in their letters to you, as the Bushings giving entire satisfaction.

Yours very truly,

FALES & JENKS MACHINE COMPANY

WM. H. ARMSTRONG
MANAGER.



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The Fales and Jenks Company, makers of textile machinery, enjoys the patronage of thousands of satisfied clients throughout the industry. Moccasin Bushings have made a large contribution to the success of Fales and Jenks products by solving the bushing problem once and for all.

Moccasin Bushings have a patented self-oiling feature. Specially treated white pine plugs, inserted in the bushing, carry oil in a continuous film to the bearing surface.

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It will pay you to find out what Moccasin Bushings can do on your looms, twisters and loose pulleys. Write us for complete information.

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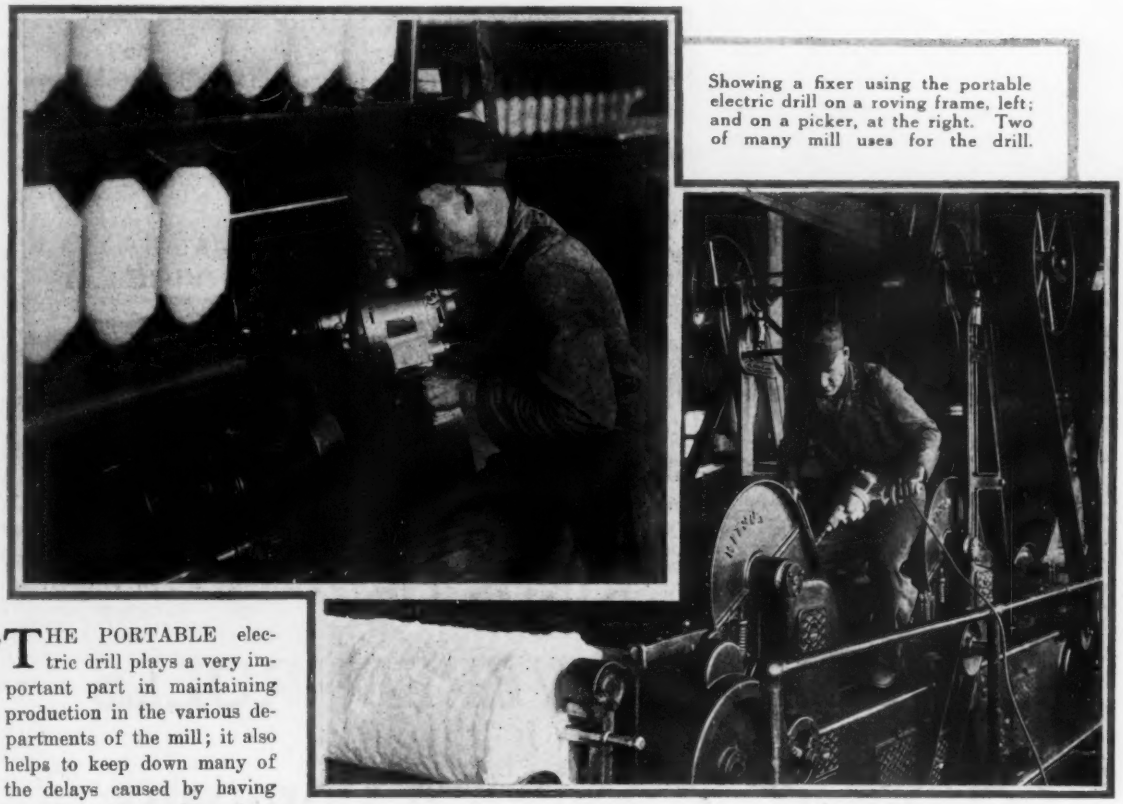
Chattanooga Tennessee

intermediate hopper, produces an even feed to the finisher beater, acted upon by the last evener in the usual way.

The gentle treatment accorded the cotton in this manner, and the beating of the loose, fluffy stock by the "finisher beater", instead of the sheets from four hard laps, are among the features emphasized for the machine in the description. When the Langley installation was partially completed, the mill had half their work on three-process and half on one-process, and comparative tests were made. Quoting from the *Bulletin*: "It was found that the yarn made from the one-process pickers was better in every way than on the three-process. This was undoubtedly due not only to the increased uniformity of the lap, but also to the gentler treatment of the cotton, as the total beats per inch on the one-process picking was only 28, while on the three-process it was 124. There was a very noticeable improvement in the appearance of the yarn, it being much freer of black specks and nips".

Some Uses of the Portable Electric Drill



Showing a fixer using the portable electric drill on a roving frame, left; and on a picker, at the right. Two of many mill uses for the drill.

THE PORTABLE electric drill plays a very important part in maintaining production in the various departments of the mill; it also helps to keep down many of the delays caused by having to wait on the machine shop. There are many five-minute jobs which must often wait for a hour or more in the machine shop until someone has time to get to them. Many of the small drilling jobs can be done by the fixer in the room without taking the part to the machine shop.

It is desired at all times to repair all breakdowns in the shortest possible time. If the fixer knows that he can fix some minor trouble without having to stop the machine but a few minutes, he will do so, without waiting to have it called to his attention. By taking care of the small things as they come up, he is able to keep his job in good repair.

The fixer, shown in the photograph on the upper left, is drilling a hole in a set screw that had been broken off in the compound gear of a roving frame, so that an easy-out could be inserted and the set screw removed. If the fixer had had to take the compound gear out of the frame, the loss of production would have been much more, even if the machine shop had been able to repair it at once, than it was by doing the job on the frame.

The picture on the lower right shows a picker fixer drilling out a broken cap screw on a picker. If the casting had been taken to the machine shop to be drilled it would have necessitated stopping the picker for a longer period of time. In a mill where the pickers have trouble keeping up with the cards this would mean a serious loss of production, unless there were a number of laps ahead. The drill shown in these photographs was furnished by the U. S. Electrical Tool Co., Cincinnati, Ohio.

An electric drill saves much time in the erection and overhauling of machinery. In overhauling spinning frames where the stands are badly worn and brass bushings are needed, a drill can be used for drilling the holes in the stands without having to take them off the frame. In the erection of machinery there are many holes that have to be drilled and tapped out; by using an electric drill there is no time lost as it is ready when needed.

An electric drill is very useful in the weave room for spotting shafts and drilling out set screws. Many pulleys and gears that would be broken off are saved by drilling out broken set screws.

The Basis of Good Judgment

Management is often capable of better judgment than it uses.

It is not so much the lack of capacity to judge correctly as it is a lack of correct facts and figures on which to base judgment.

Business climbs from red to high black on *knowledge* of conditions, coupled with sane action.

When management establishes a competent source and better supply of *Knowledge*, the waste in its previous judgment is apparent.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Picking a Lease for Re-Sizing Warp.

EDITOR COTTON:

I would be glad to have the ideas of some of the readers of the "How Other Men Manage" department as to the best method to pick a lease on a 5,000 end warp, so as to be able to re-size from the loom beam, this warp being soft and practically impossible to run.

CONTRIBUTOR No. 4052.

The Effect of Moisture in Waste Calculations.

EDITOR COTTON:

In the July issue of COTTON "Contributor No. 4032" asks several questions about the effect of moisture content in making waste calculations. He wants to know whether the waste percentage should be figured on the gross weight of the cotton when received at the mill or at the time the cotton is actually put into process; also, the effect of moisture on the waste percentages during the different processes of manufacture.

He is correct in stating that the moisture content of the cotton changes between the time it is received and the time it is put in process.

The entire structure of cost figures rests on the basis of the cost of the raw material, and inasmuch as cash has been paid for the moisture content of the bale, as well as the bags, ties, and other items of waste, he should base his cost and production figures on the gross weight of the bale as received. Even if later, the sale price of the product is quoted by the yard, piece, or package, the weight of the raw material should be the basic factor in setting the price.

Humidifying systems serve a two-fold purpose. First, in maintaining the material in the best condition for working through the various machines with the least preventable waste, and second, in maintaining the moisture content for which the manufacturer has paid cash, and which he is justly entitled to re-sell to his customers.

Some authorities claim eight per cent as a normal moisture content for cotton in the bale, and 6.5 per cent as normal for finished goods.

It is possible to approximate the moisture content of the bales by the use of the electric oven, but when the effects of the seasons, sources of supply, storage conditions and weather variations are considered, it is doubtful if the information so gained would be of any practical value. In cases where cotton is received in an extremely moist state, the moisture content could be determined in this way; but ordinarily in cases of dispute, the weight of the bale after a reasonable time under normal storage conditions would indicate the excessive moisture content.

The subject of waste is one of greatest importance, and extreme care should be taken to account for all loss of weight between the bale and the finished goods. This is done in all well-run mills and where the item of invisible waste reaches undue proportions, the moisture content of the cotton on receipt will warrant careful checking.

CONTRIBUTOR No. 4158.

EDITOR COTTON:

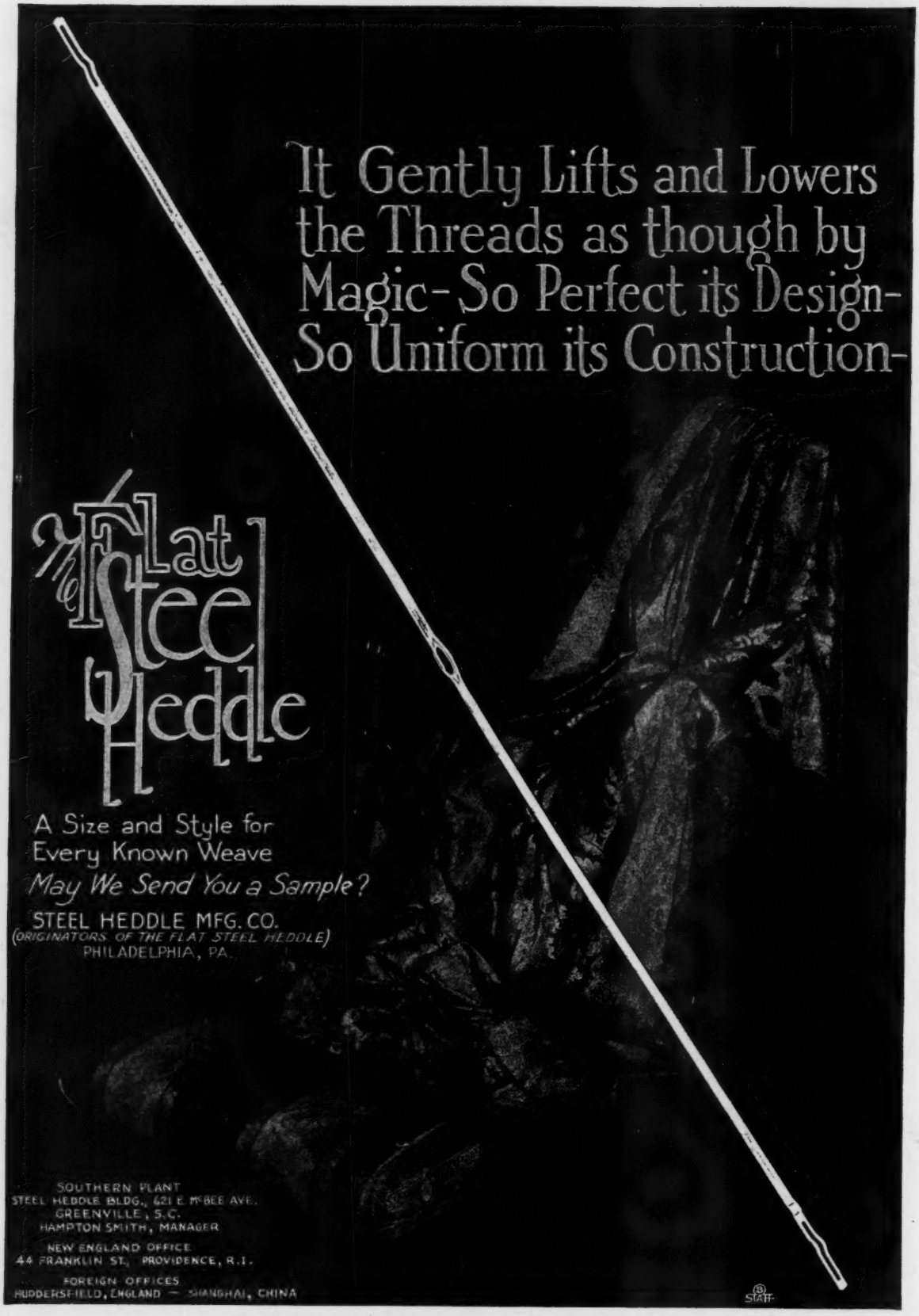
In your July number you published an interesting question from "Contributor No. 4032" concerning the effect of moisture content in waste calculations. He wanted to know how to consider the varying moisture content of different bales of cotton in determining the calculations for waste.

It is true that very little attention is paid to the amount of moisture contained in cotton at the time it is purchased, received at the mills, and run from the warehouse into the mills. This matter has recently been given more consideration than formerly, I think, and I believe that the time is not far distant when we shall see samples drawn from bales in every lot of cotton, and the moisture content taken and perhaps final adjustments made.

Inasmuch as the individual bales will vary as to their moisture content as well as various lots of cotton, and also since cotton mixes are usually made up so far as possible of lots from various sections, picked at various times and under varying conditions, and brought into the mill without notice of regain, I hardly see how it would be possible to base waste percentages on bone-dry weights or to take moisture into the waste calculations at all. This reminds me of an efficiency engineer who was young in the game when efficiency engineering first became a fad. His idea was that we should be able to trace each strand of yarn back to the individual bale from which it was spun, in this way determining what cotton was best suited to our purposes and he even went so far as to suggest that an account of the running qualities of each strand from each bale should be kept. As we understand such a proposition, of course, we would have to have more bookkeepers and record makers than we had operatives in the mill. In fact, production would be so slowed down that we wouldn't have anything for the operatives to do while the bookkeepers were getting their data.

The case is somewhat similar in that it involves too much bookkeeping, and we would get lost in the shuffle in trying to make allowances and keep lots of cotton and bales of cotton separated so as to make these allowances worth while.

It is my opinion that all waste percentage for practical purposes can safely be calculated on the bale as received in the opening room. Of course, I do not wish to dis-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courage your contributor from his desire or in his efforts to ascertain what his moisture content is, how it affects his work, and better still, how to control it and even it up. I would be glad to hear from him from time to time through your columns as he progresses in this work. It is hardly possible that moisture content in cotton will vary on an average of more than three per cent. Now, for example, figure 15 per cent on a bale of 500 pounds; the total will be 75 pounds. Now, take another bale of similar weight but containing three per cent more moisture, and you total a 75-pound loss in weight; and the difference in percentage, therefore, is about .4 of one per cent. The chances are if we select any two mixes of cotton of as near the same amount of moisture content as possible, and of the same grade and character of cotton, we would do well to run it through the mill and show losses of not more than .4 of one per cent apart. If you select individual cards and pickers you will find that they will vary fully that much from day to day.

Our advice is at the present time in calculating the costs of finished product, to allow for the maximum amount of waste gotten on any grade of cotton, and base the costs on this.

I have been quite concerned over this problem myself, and am attacking it in quite a different way. Our idea is that if cotton is opened and aired for a few days, that it will contain practically uniformly its natural regain under any given atmospheric condition. We propose, then, to arrange our picker room so that we can control the humidity in that room and maintain it at a constant percentage. Since we have found from practical experiments that cotton will adjust itself to its proper condition in a room within only a few minutes, we believe that we will keep a practically constant regain in our cotton through the picking process, thereby delivering laps to the cards with uniform regain. Since we already have our card room, spinning room, and weaving room humidified and controlled, there should be a minimum of variation in our product from varying moisture content under these conditions.

CONTRIBUTOR No. 4034.

Using the Wooden Top Roll on Spinning.

EDITOR COTTON:

You recently published an inquiry from a subscriber who stated that he was having difficulty in operating the Washburn wood top roll on spinning.

In using the Washburn roll, I have found that there must be a pretty careful investigation of individual operating conditions, such as the diameter of the front steel roll, the length of the staple, the numbers of yarn and drafts. These must be considered to determine the right Washburn roll to use. They should not cause roller laps on the middle roll, and if they are properly used they should prevent this condition.

The object of this roll is to reduce the drawing action at the middle pair of rolls on the spinning frames, thus causing the principal draft to occur between the first and third pair of rolls, the cotton fibers slipping under the wood roll acting as an evener. The resilience of the wood and the delicate tension applied by the felt and leather to the roving, cause it to slip through the middle roll, is arranged to lay in the loose ends of staple, preventing fly waste, cockled yarn and middle roller laps. When using these rolls the front and middle pairs of rolls must be set as closely as the stands and cap bars will allow, that is to say *jam up*.

T. B. (N. C.)

A Method for Counting Warp and Pick.

EDITOR COTTON:

In the August issue, "Contributor No. 4036" asked for a standard method of counting warp sley and filling picks. He asked whether it was correct to figure the count within four inches of either selvage.

I cannot say what the proper standard is for this, but it has been my experience, in connection with work in a textile testing laboratory, to test the warp sley in five places and take the average of these five counts. The first count was taken about an inch from the selvage, the second count was taken at about one-fourth the way across the cloth, the third count was taken in the middle of the cloth, the fourth count was taken at three-fourths the way across the cloth; and the fifth count was taken about one inch from the opposite selvage. The count for the filling picks was secured in the same way.

I once was asked to determine the sley of cloth before and after brushing, and this will indicate how the cloth will vary in sley and pick simply by going through a brusher. I submit the accompanying summary of this test as a matter of possible interest in connection with this subject:

Object: To obtain the average and individual counts, warp and filling, before and after brushing operation on 80x88, 40-inch cloth, 28s warp and 38s filling.

Method: Piece of cloth was taken from Draper loom having reed 1754 dents on 46½-inch averaging 37.7 dents per inch. This cloth was later brushed in the cloth room. The cloth was counted for sley across the entire width before and after brushing. Also, 36 inches of filling were counted before and after brushing.

Results:

	Filling Count.			Warp Count.	
INCH	Before	After.		Before	After.
1	88	86		84	84
2	87	87		80	81
3	88	86		80	81
4	88	87		80	80
5	87	86		81	81
6	88	87		79	80
7	86	85		80	81
8	86	86		79	80
9	87	86		79	80
10	89	87		80	81
11	88	87		81	81
12	87	87		80	80
13	88	87		80	81
14	89	90		78	79
15	86	86		79	80
16	88	87		79	81
17	88	87		79	82
18	88	87		79	80
19	86	85		79	80
20	86	86		79	82
21	88	86		79	82
22	85	85		79	81
23	87	86		79	81
24	87	86		79	80
25	89	89		78	80
26	87	85		79	81
27	86	86		80	81
28	89	88		79	82
29	88	87		80	82
30	87	84		79	80
31	87	86		80	81
32	87	87		79	80
33	87	86		79	80
34	86	86		79	81
35	88	87		79	81
36	87	88		80	81
37				79	80
38				80	81
39				80	81
40				82	63
				28	
TOTAL	3143	3114	TOTAL	3211	3214
Average Pick	87.4	86.5	Avg. Sley	79.7	80.8

The width of the cloth before brushing was 40 5/16 inches, and the width after brushing was 39 13/16 inches. It will be noted that the figures show an average pick of 87.4 before brushing and 86.5 after brushing; and an average sley of 79.7 before brushing and 80.8 after. Allow-

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ing for a difference of ½-inch for 1.25 per cent contraction in width, the test shows that the cloth was stretched from 36 inches to 36 21/64 inches, or .91 per cent.

CONTRIBUTOR No. 4041.

What Causes Long Chain Warps to Roll and Lock at Beamer?

EDITOR COTTON:

Recently we have been having considerable trouble with our long chain warps rolling or locking, and giving considerable trouble at the beamer. Our warps are made in two of our mills, and we have been having about the same amount of trouble with these warps from both mills, and the trouble all came on about the same time with all the warps. It would seem, therefore, that it is not caused in the warper room, but more likely on our indigo dyeing machine. We have gone over this machine very carefully, and so far have been unable to locate any causes for this trouble. We have pulled the rolls up two or three times and examined them, and even went so far as to drain our indigo vat and clean it thoroughly, and still have detected no apparent cause for this trouble.

I am wondering whether or not any of your subscribers have ever had such a problem to solve, and if so, what are the causes they have discovered.

CONTRIBUTOR No. 4056.

Polishing Rings with Grinding Compound.

EDITOR COTTON:

After reading the letter of "Contributor No. 4042," in the June issue of COTTON, I wish to give my experience with using valve grinding compound to polish new rings. We started to put on some new rings, 1¼ inch, No. 1 flange. A section man had a box of compound in his tool box he had bought to use on his car; I borrowed enough to polish one rail of rings. After the frame had run two days I examined the rings and found them to be in good shape in every way. I also watched them closely when I started the frame up to see that it was not rubbing off on the yarn.

Speaking of breaking in new rings, I wonder if any overseer has tried wiping out the ring with a piece of waste after it has run a couple of days. Pick out a bobbin where the end comes down a good bit and wipe out the ring with a clean piece of waste. It is surprising the amount of grease that will be found. Now put the end up and notice how much better it pulls and runs, especially on the doff.

I also wish to say to "Old Timer", in regard to his question on changing travelers. I have found that when spinning numbers from 28s to 44s it pays to change travelers every three or four weeks. I have seen places where the section man changed two frames per day until he went over his entire job. When he gets around he starts all over again. Some spinners say never change travelers when running numbers this fine; but the work will certainly run better when the travelers are changed regularly instead of being allowed to run until they break off.

The article in the June issue by "Contributor No. 4022," on the "Importance of Oiling" is worth the June issue of COTTON. I think that every overseer and second hand who reads it and acts accordingly will profit by it.

M. B. (S. C.)

Discussing a Problem on Combers.

EDITOR COTTON:

In reply to the question of "Contributor No. 4043," who is having trouble with the ends cutting on Nasmith combers, I would like to say that the leather detaching rollers may be causing this trouble. I should like to advise that when he notices an end cutting to take the leather roller out and see whether the ends of the roller, where they fit into the bushings, are worn or not. I have seen rollers where these ends are badly worn, usually just one end would be badly worn. When the roll was weighted down the worn end of the roller would have considerable play in the bushing. It can be seen that the roller would not at all times be in contact with the steel detaching roller. When the roller is delivering and starts to jump of course the end cuts. When the end cuts, all the stock is drawn down into the waste, which is more than the aspirator can care for.

I do not think that this is so much a matter of air. The contributor states, "All our machines do not do this, just an end here and there." Look at it in this way, how could the air be wrong and affect just one end? This shows that the trouble must be in the end. I have noticed this trouble a few times and have had the defective rollers renecked.

I have on occasion seen an end cutting, and it was some time before we could get it to running right. The end would cut and the brush fill up. This bothered us for some time. At last I noticed that the lap was too much to one side and was being crowded through the feed roll and the nippers. By setting the guides over, we eliminated this trouble and the lap ran through evenly.

CONTRIBUTOR No. 4141.

EDITOR COTTON:

The trouble "Contributor No. 4043" is having with his combers arises, in my opinion, not from the air currents of the aspirator, but from other causes. It appears to me that he is trying to correct a fault by means of the aspirator that is not caused by it; if it were the aspirator, he should be able to set it so as to do away with the trouble. I have never found it necessary to adjust the currents in the aspirator, once the proper settings are discovered. The aspirators of all our combers are set alike, our only care in this respect is to keep the fan running easily, and the aspirators clean. We take the aspirators apart once a month to take out the bunches of waste and leaf, sometimes we find a wad of short fiber has collected and plugged the inner tin. We have found that having the upper edge of the hole in the inner tin about an inch and a half below the perforations in the outer tin, gives the best results at 98 nips per minute. It may be that the combers in question have dirty aspirators or the wrong settings.

I believe that the trouble lies in the heads. If the heads are set exactly alike, the trouble must lie in some other cause than the settings. I would suggest, however, that the settings be carefully examined. In a mill where there are only eight combers it is hardly likely that a regular comber man is used. I have always found it difficult to convince men who have not had long comber experience that absolute accuracy is essential. To do good work, combers must be set as accurately as possible. This requires a good deal of patience, and is often not done by other than

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experienced comber men. Variations in settings may be the trouble in this case.

If the aspirator is clean and the settings are right, I would examine the nipper plates and the springs holding them. The edge of the bottom nipper plate must be absolutely straight and perfectly clean. It must fit into the upper nipper plate perfectly, and the upper nipper blade must also be straight and true. Possibly new upper nipper blades have been fitted to these combers imperfectly. The blade should rest snugly against its supports, and it must not be bent into an arc. These blades are not interchangeable, but must be fitted separately. The two nippers should be absolutely tight along their whole length when closed, and at every point along their bite there should be the same pressure. If there are any little lumps of wax or dust along their edges they will not close properly, and the end will gradually break down. Wax collects from the cotton and the dust collects in any scratches or dents that might occur.

The pressure at all points of the nippers must be equal, or the end will pull through wherever the pressure is low. This can be regulated through the nipper springs. After working awhile these springs weaken, more or less, and should be removed. It is possible to adjust them by pulling down on the nuts, but this being a hit or miss proposition, I think it is much better to purchase new springs and set the nuts the same distance on all. The pressure is then the same on both sides of all the nippers. The cost of the springs is so small, and their work so important, I think it is unwise to adjust them separately. They should not be set too tight, as in this case there would be more pressure on the ends than in the middle.

The leather detaching rolls will also cause the end to break. They must be evenly covered, well varnished, free turning, and evenly weighed. I do not consider it advisable to run detaching rolls on which the covering is slightly worn. There is only one fiber between the two rolls at any one point, theoretically, and the diameter must be uniform to draw the fibers evenly. The roll must turn easily in its bearings or it will not draw evenly. If too much weight is put on the rolls, the ends will hold back as described, the excessive weight being applied to the ends of the rolls will cause them to arc in the middle.

It may be that the nippers open too late, or not wide enough. If they open too late the lap is taken from the top comb too soon, making a bad end. If the nippers do not open wide enough, there is a poor piecing, and occasionally a broken piecing. The air current from the aspirator might affect this; possibly the combers in question have this fault.

If the staple is less than 1¼-inch, I would set the nippers to a flat 14 at index 19.

The needles in the cylinder may be bent or broken, or the brushes might not keep the needles clean. This would cause the trouble "Contributor No. 4043" is having.

C. T. (MASS.)

Philadelphia Quartz Co. Moves Chicago Office.

The Philadelphia Quartz Company, manufacturers of silicates of soda, have removed their Chicago office to larger quarters in the Engineering Building, 205 West Wacker Drive. Carl F. Wolcott is in charge. Warde C. Cookman has recently been added to the office sales staff.

Beater Settings on Long Staple Cotton.

EDITOR COTTON:

Referring to the letter from "M. R. (N. C.)", appearing in the June number of COTTON, and his suggestions on setting feed rolls to picker beaters for long staple cotton, varying from 1⅛ inch to 1⅝ inch staple, his comments on this most important subject are very interesting indeed. The writer has not seen any article in connection with this subject which covers this matter so thoroughly.

On the other hand, allow me to remark that he omitted to add that in order to carry out his suggestions, that is to say, set the feed roll as closely as possible, he I believe, should have stated that it is assumed that the pickers are in perfect condition, the beaters balanced, etc. It is very rare indeed, particularly on old machines, that these close settings would be safe, for obvious reasons.

Referring to his comments regarding the danger of having too wide a setting between the feed roll and the Kirschner beater, this in the writer's opinion is very true. During the last few years long staple cotton has deteriorated; this condition increases the number of neps. At a mill that has the reputation of spinning the finest yarns in the world—they look upon 100s as being coarse numbers—it was found some years ago that deterioration had set in on the Jannovitch Sea-Island and Abbassi (white Egyptian cotton). In order to preserve their enviable reputation, the mill had their cotton experts present while these cottons were being ginned. They also spent over a year and an immense amount of money in making minute tests regarding the settings and speeds of beaters. It was found that the 16 or 18 inch type of Porcupine beater proved to be the most desirable type to use on their 1⅜-inch up to 1⅞-inch length staple. It was also found, notwithstanding the very high counts they spun, that when running a lighter lap it was difficult to get a perfect sizing. They found that for their particular purposes, the Kirschner type beater had a tendency (no matter how close the feed rolls were set to it) to increase the number of neps, although the appearance of the lap was better. Tests were made with the two-arm and three-arm bladed beaters. For their particular purpose they found that the ends of the fibers suffered somewhat.

Many mill men when spinning long staple cotton give their strictest attention to the close setting of the cards and yet regard a close setting on pickers as dangerous and injurious to the staple. The latter idea is not correct, as "M. R." particularly emphasizes.

B. O. B. (GA.)

EDITOR COTTON:

Answering the inquiry of "C.R." in April COTTON for beater settings on long-staple cotton, it will be necessary to assume various combinations of beater arrangements to cover the question.

As a basic principle, the Buckley beater may be set as close to the feed rolls as desired, the blade can only be set to a distance that will still permit the lap to pass through without excessive bruising of the fibers, while the Kirschner beater has a wide variation of possible settings, dependent on the staples to be run.

In setting the Buckley, it is a matter of little consequence what the staple is, the same setting will work equally well on any staple, or any grade of cotton. This fact is due to the staggered arrangement of the striking arms

of this type of beater, which cover so small a portion of the sheet of lap at any one time that it is impossible to pinch up the cotton closely enough between the arm and the feed roll to damage the staple. The width of the arms on a Buckley is about 5/16-inch, and regardless of the closeness of the setting, the cotton can always spread sideways in yielding to the force of the blow, and be torn off the sheet without injury.

This assumes that a mill has one of the late type Buckley cylinders, with straight arms, which oppose square shoulders to the sheet of lap. The older type beaters, with bent arms, oppose a corner of the arm to the lap, and do not clip it off evenly. On either intermediate, or finisher, as well as breaker, the Buckleys of the new type may be run with a setting of 3/16-inch with excellent results. This setting may be increased to 1/4-inch on the breakers, but for good work should never be more than 1/4-inch. A wider setting will so reduce the effectiveness of the blows as to result in lumpy laps. The Buckley is gentler in its action on the cotton than any other type of beater, and when set too wide, the arms will not clip the cotton cleanly off of the sheet, but will knock it off in loose lumps. On intermediates or finishers, the Buckley may be set as close as 1/16-inch without injury, though a closer setting than 1/8-inch is seldom necessary.

With too wide a setting, the Buckley cylinder will almost certainly lap up the feed roll, and if this trouble has been experienced, it can be remedied by closing the setting. Too wide a setting will also throw good cotton into the mote box. The reason for this is that the beater, by not keeping the lap clipped clean, will throw some of the large lumps back over the top grid bar, where they feed down into the mote box, or wrap around the feed roll.

Blade beater settings will vary with the staple and the machine. For the breaker, a setting of 1/4-inch on 1 1/8-inch cotton, up to 3/8-inch on 1 5/8-inch should be satisfactory. Some carders will set wider on the long staple where the previous opening is not good. If you have a good preopening system, and the stock is in a well loosened condition when it reaches the breaker, a setting wider than 3/8-inch is not advisable, as some of the cleaning is lost. Poorly opened cotton may require a wide setting to avoid injury.

On an intermediate, or a finisher, a setting of 3/16-inch for 1 1/8-inch, up to 1/4-inch for the longest staple will do well. Some will advocate a wider setting for the longest staple, but on such cotton the laps are usually light, and the beater speeds low, so that a 1/4-inch setting is about right. Intermediate pickers are seldom used on very long staple stock.

The writer's advice on Kirschner beaters would be to take them off of staple cotton, but if you must use them, to set them wide. On 1 5/8-inch stock, the Kirschner is particularly objectionable, as nearly all this very long staple is ginned on roller gins, which leave the cotton in a matted and ropy condition, with all the motes left in the stock.

The needle points of the Kirschner beater, set as they are with a slight forward pitch to engage the fibers, will inevitably tear numbers of these matted, neppy masses, and fill the work with nits. The best possible arrangement for running staple cotton is to use all new type Buckley cylinders with settings recommended by the manufacturers for any particular work. These settings will almost certainly be about 3/16-inch all the way through, with possibly 1/4-inch on the breaker. This inquiry was doubtless inspired by some trouble with breaking strength or with nitty work, and for both of these difficulties, the use of the Buckley throughout is the best remedy.

On 1 1/8-inch or 1 3/16-inch stock, the Kirschner, if used, should be set about 1/4-inch. Closer setting will probably cause a lowering of strength and an increase of nits. Close settings of a Kirschner are satisfactory with very short cotton, but are not recommended on longer stock. If the Buckley is not used all through, the blade is better for use on the finisher where 1 1/4-inch to 1 5/8-inch cotton is used.

C. L. (MASS.)

Starching and Finishing Work Shirt Sateens.

EDITOR COTTON:

I notice in the June number a letter from "Contributor No. 4023" with reference to starching and finishing work shirt sateens, and would like to express some thoughts along this line based upon my experience.

Unless the maker is given a pattern to finish by; is putting on the market a new cloth; or is competing against another cloth that has certain features of finish, such as stiffness, luster, from the calendering by schreiner, beetles, etc., I would proceed as follows:

After the cloth has been dyed and mangled, it is dried on the cans and allowed to cool. Then it is conditioned and allowed to lie in a cool place for two or three hours; then hot Swiss-calendered on a three-bowl calender, using heavy pressure. Then stretched on the belt stretcher or clip stretching machine and afterwards filled on a two-bowl starch mangle, using the following formula:

Yellow dextrin 375 pounds; Farina 50 pounds; Olene oil (50 per cent) 3½ gallons; direct black, 14 ounces; carbolic acid (No. 5) 1 pint; sufficient water to make, when boiled, 250 gallons.

When filled, dry on the "cans" and allow to cool; then again condition on the damping machine and let lie for two hours; afterwards, hot Swiss calender on a six bowl calender and again stretch on a clip or belt stretching machine and then make up as required.

For a better class cloth to give a good "clothy" feel, the following method is suitable:

After dyeing, give the cloth a good mangling, dry and allow to cool. Condition on the damping machine and allow to lie in a cool place for four or five hours. Then hot Schreiner-calender; afterwards steam the roll under pressure in a suitable steaming machine, using "dry steam". Again Schreiner-calender and stretch to width required on a clip stretching machine. Of course the formula for starching, etc., may have to be modified or added to according to the make or construction of the cloth being finished. The Schreiner bowl will be engraved the number of lines per inch required, and if a high gloss is required then it is friction calendered before the Schreiner calender process.

Conditioning or damping the cloth is of more importance than it seems at first glance. It replaces natural moisture taken out of the cloth at the dyeing operations.

It should be carefully manipulated, for it is one of the important functions of finishing and should be entrusted to a competent operator only.

The cloth must be thoroughly cold before it is conditioned, or the moisture will not be absorbed as it ought to be, and afterwards, the cloth should remain in a cool place

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For example . . . the matter of cleaning roving bobbins. There are three ways open. You can make the spinner responsible for cleaning the bobbins on frames—which necessarily slows down production. Or—you can hire a crew of bobbin cleaners . . . and replace a lot of ruined bobbins each month.

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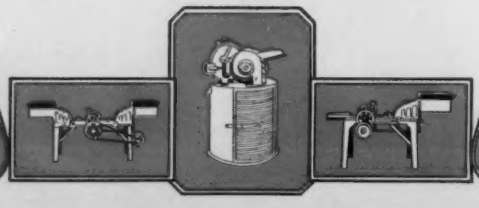

for several hours to allow the moisture to thoroughly penetrate.

I trust the foregoing reply may be one, among others, which will be of some use to your correspondent, but, as "Contributor No. 4023" says, one must see a sample and know the weight and finish required, otherwise it is only guess work. I suggest a working knowledge of chemistry and a good laboratory in which to do a little research work, as being necessary to the finishing department of every mill. Given these, and provided he has the necessary machinery, one is well equipped to analyze and finish any fabric submitted. C. W. (CANADA).

Preventing Pickers from Sucking Back Motes.

EDITOR COTTON:

Referring to the letter of "Contributor No. 4019," in which he asks, "What is the best remedy to prevent pickers sucking back motes and trash". It is understood that they have the old style Atherton pickers. I might say that this objectionable feature can take place on all makes of machinery, for the following several reasons.

First, the main reason is due to that elusive substance called air. On old pickers it is often found that there are a number of "air leakages". Also, the man in charge of the picker room, in order to offset this undesirable condition, speeds up his fans far too high. There are cases where the old type of bladed beater has been replaced by Kirschner beaters, but the speed of the fan is not reduced. The Kirschner beater, owing to its construction, acts as a fan, and therefore the fan speed can be reduced approximately 20 per cent from what it formerly ran with the ordinary bladed beater.

The setting of the grid bar circles which carry the grid bars should be carefully looked into. Also, the spacings between the bars should be adjusted. It is a good practice from time to time to clean the bars and polish them up with graphite. B. O. B. (GA.)

Figuring the Eyes Per Inch in Harness.

EDITOR COTTON:

In reply to "Contributor No. 4037", who wants to know a short way of figuring the heddles per inch on harness, I give the following rule which I have always used and found to be very satisfactory. Let us assume, for instance, that we want to make 80 x 80, 4.00-yard print cloth on four cotton harness, each two harness working as one.

First, let us figure the reed. I do this as follows: Sley minus one times 95 per cent, divided by the ends per dent, thus:

$$\frac{(80 - 1) \times 95}{2} = 37\frac{1}{2} \text{ dents per inch.}$$

Now we want the yarn to be as straight as possible from the reed back through the harness. In one inch of reed there are 75 ends so we want 75 heddles an inch of the four harness, so 75 divided by four harness gives 18.75 heddles per inch. Let us say we want the harness to have heddles for 44 inches, so $18.75 \times 44 = 825$ heddles on a 44-inch spread. So we can order our harness—four shades to the set and 825 heddles on a spread of 44 inches.

The rule might be stated thus: Dents per inch in reed multiplied by the ends per dent and divided by the number of shades gives the heddles per inch on each shade of harness. Multiply this by the inches desired for the spread, and it will give the total heddles and spread on each harness.

CONTRIBUTOR NO. 4040.

Trouble with Mis-picks and Shuttle Marks.

EDITOR COTTON:

Being a subscriber to COTTON, I am seeking some information. We are making 2.85-yard, 76 x 48 three-leaf goods on 30-inch Model E Draper looms, making 164 picks per minute, using 17s filling and 13s warp.

We are having a lot of trouble with mis-picks or shuttle marks, the difficulty coming up on the change. It seems that when it gets ready to take on a fresh supply of filling in the shuttle it will make from one to two mis-picks before doing so.

I would appreciate the suggestions of any of your readers as to the causes they have found of this difficulty, as well as their suggestions on how to remedy it.

R. C. (GA.)

A Report on Warper End Breakage.

EDITOR COTTON:

Due to the number of tests that are being run at this time to determine the end breakage in the various departments of the mill, I am sending in a test that I ran on my warpers because I feel that it would be of general interest.

The test was run on 13 warpers for a period of 11 hours. The average number of the yarn was 30.44s, with a breaking strength of 59 pounds. There was a total of 126 stops for the 11 hours or 1.15 stops per warper per hour. We listed the causes for the breaks on the form under their proper headings as far as we were able to ascertain them.

I would like to hear from some other overseers who have run these tests so that we can compare our end breakage and forms. H. H. (N. C.)

END BREAKAGE TEST ON WARPERS

Average Number Warpers Run 13 Hours Run 11 Date 5/23/28

Cause of Stop	Number Stops	Total
Slip Knots	𝍸 𝍸 𝍸 𝍸 111	23
Weak Yarn	𝍸 𝍸 𝍸 𝍸 𝍸 1	26
Soft Yarn	𝍸 1	11
Tangled Spools	𝍸 1	11
Waste	𝍸 𝍸 1111	14
Gouts	1111	4
Kinks		
Spools Run Out	1111	4
Lapped Ends	𝍸 1	6
Loose Threads		
Large Knots		
Unknown	𝍸 𝍸 𝍸 𝍸 𝍸 11	27
	Avg No Yarn 30.44s Breaking 59 lbs	

Total Stops 126 Test Made by

Stops per Warper per Hour 1.15

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38 Natoma Street

GENERAL DYESTUFF CORPORATION

Securing Even Shades in Circulating Machine.

EDITOR COTTON:

This refers to the problem of "Y. B. (Ga.)", published in the July issue, asking about dyeing yarn in the circulating type machine. He said that in dyeing yarn tan he has trouble with uneven shades. He gives his formula, which I suggest be read by anyone interested.

These suggestions must be general, as he did not give the kind of yarn, nor mention the use of a water softener or the type of package machine. I will outline some general methods by which the trouble may be eliminated.

The probable causes of poor dyeing are: hardness of water; poor solutions of dyestuffs used; lack of uniformity in weight, size and softness or hardness of packages dyed; poor preparation of dyestuffs and yarn; operation of machine, including proper shifting periods, method used, and machine being out of repair.

Taking up first the hardness of the water, if the mill uses water from a city water system, or has a filter at the plant, they will secure a clean water free of silt and mud, as a rule. This does not necessarily eliminate the hardness in the water, which is best taken care of by adding a few ounces of soda ash, tri-phosphate of sodium, or caustic soda to the dyebath, previous to entering the dyestuffs.

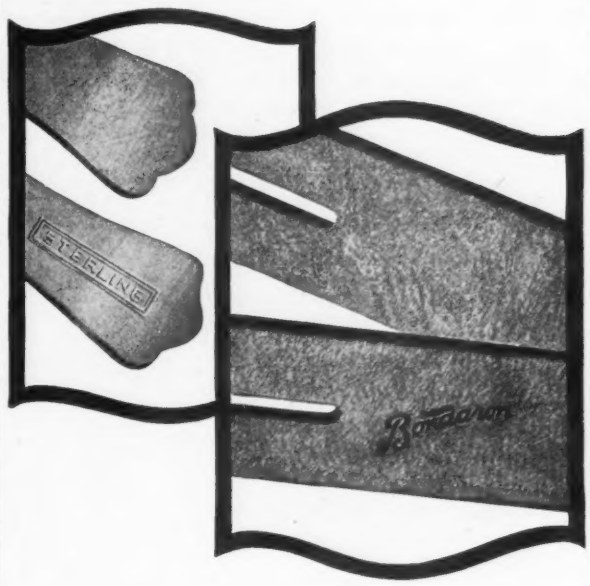
From what "Y. B." says, he is using ready-mixed dyestuffs. I feel it is better to buy the straight colors, having the dyestuff company from which the colors are secured rematch the shades, using the very best direct colors that are not affected by hard water or metals, and which can be added at 180-200 degrees F. if necessary for shading purposes. These dyestuffs must be level dyeing and give excellent penetration, and have the same rate of exhaustion and affinity for the cotton fiber, otherwise, there will be a great variation of shade resulting from one formula.

In the winding of the package on the springs it is best to use clean covers each time, for there can be a noticeable change in shade caused by leaving a cordovan dyed cover on a spring for a light shade, for example. This is caused by the excess dyestuff going into solution again and throwing the batch of yarn off shade. In such a case, the use of straight dyestuffs simplifies matters as the color can then be shaded, if necessary, with more ease.

When the packages are either soft, hard, heavy or light, this will cause a variation in shade on the same dyelot. This lack of uniformity causes an uneven distribution of pressure in the dyeing process. It is the cause of poor penetration and "streaked" dyeing, and if the winders will be careful in winding a uniform package, just medium hard and weighing approximately one pound net, this will take care of almost every type of cotton yarn. The ends of the packages are best when they are straight and not hard on the ends and loose in the center of the package.

The dyestuff must be boiled up thoroughly and strained through cloth before entering into the dyeing machine. If the yarn is a fine count, it would be best to give a 15 to 30-minute boiling out with one per cent Turkey red oil, pine oil and caustic soda or soda ash; then entering the dyestuff and following this method in a general way will aid in solving the problem of faulty dyeing:

After the preliminary boil-out of yarn on some of the more difficult counts of yarn, enter 1½ per cent Turkey red oil or sulphonated castor oil cold, ½ per cent pine oil, 2 to 6 ounces soda ash, tri phosphate of soda or caustic



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Plated silver looks so much like sterling silver that from the standpoint of the *appearance* there seems little to choose between them. Ordinary check straps with the hair on so closely resemble the product bearing the name "Bondaron" that to the eye one check strap may *seem* to be as good as another.

But appearances are deceiving—"all is not gold that glitters"—and the army of "just as good" merchants leaves nothing but dissatisfaction in its train. When a jewelry clerk shows you silverware you look for the name "Sterling" before you buy. When a mill supply man offers you check straps insist on seeing the name Bondaron. Unless the name is there you won't get the genuine—and if you don't get the genuine you *can't* get Bondaron service.

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These suggestions must be general, as he did not give the kind of yarn, nor mention the use of a water softener or the type of package machine. I will outline some general methods by which the trouble may be eliminated.

The probable causes of poor dyeing are: hardness of water; poor solutions of dyestuffs used; lack of uniformity in weight, size and softness or hardness of packages dyed; poor preparation of dyestuffs and yarn; operation of machine, including proper shifting periods, method used, and machine being out of repair.

Taking up first the hardness of the water, if the mill uses water from a city water system, or has a filter at the plant, they will secure a clean water free of silt and mud, as a rule. This does not necessarily eliminate the hardness in the water, which is best taken care of by adding a few ounces of soda ash, tri-phosphate of sodium, or caustic soda to the dyebath, previous to entering the dyestuffs.

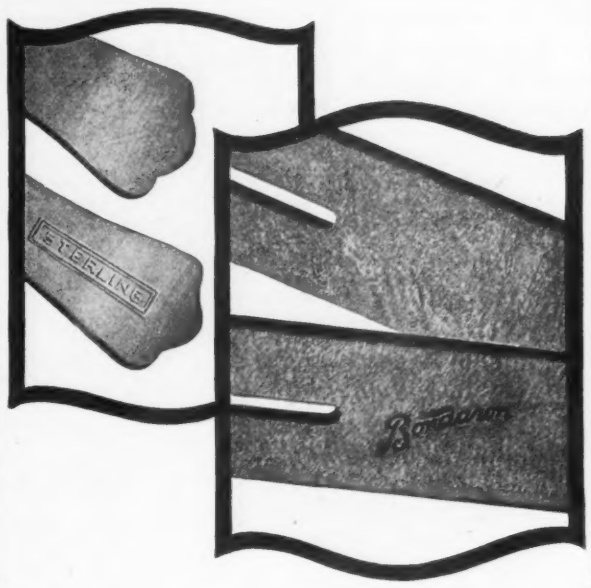
From what "Y. B." says, he is using ready-mixed dyestuffs. I feel it is better to buy the straight colors, having the dyestuff company from which the colors are secured rematch the shades, using the very best direct colors that are not affected by hard water or metals, and which can be added at 180-200 degrees F. if necessary for shading purposes. These dyestuffs must be level dyeing and give excellent penetration, and have the same rate of exhaustion and affinity for the cotton fiber, otherwise, there will be a great variation of shade resulting from one formula.

In the winding of the package on the springs it is best to use clean covers each time, for there can be a noticeable change in shade caused by leaving a cordovan dyed cover on a spring for a light shade, for example. This is caused by the excess dyestuff going into solution again and throwing the batch of yarn off shade. In such a case, the use of straight dyestuffs simplifies matters as the color can then be shaded, if necessary, with more ease.

When the packages are either soft, hard, heavy or light, this will cause a variation in shade on the same dye-lot. This lack of uniformity causes an uneven distribution of pressure in the dyeing process. It is the cause of poor penetration and "streaked" dyeing, and if the winders will be careful in winding a uniform package, just medium hard and weighing approximately one pound net, this will take care of almost every type of cotton yarn. The ends of the packages are best when they are straight and not hard on the ends and loose in the center of the package.

The dyestuff must be boiled up thoroughly and strained through cloth before entering into the dyeing machine. If the yarn is a fine count, it would be best to give a 15 to 30-minute boiling out with one per cent Turkey red oil, pine oil and caustic soda or soda ash; then entering the dyestuff and following this method in a general way will aid in solving the problem of faulty dyeing:

After the preliminary boil-out of yarn on some of the more difficult counts of yarn, enter 1½ per cent Turkey red oil or sulphonated castor oil cold, ½ per cent pine oil, 2 to 6 ounces soda ash, tri phosphate of soda or caustic



They May Look Alike—
But the Difference is Vast

Leaving the hair on an ordinary check strap doesn't any more make it a *Bondaron Check Strap* than the addition of a suit of clothes makes a man out of a monkey. Without the mark "Sterling" to guide them, the purchasers of silverware would be unable to distinguish the unreal from the genuine.

Plated silver looks so much like sterling silver that from the standpoint of the *appearance* there seems little to choose between them. Ordinary check straps with the hair on so closely resemble the product bearing the name "Bondaron" that to the eye one check strap may *seem* to be as good as another.

But appearances are deceiving—"all is not gold that glitters"—and the army of "just as good" merchants leaves nothing but dissatisfaction in its train. When a jewelry clerk shows you silverware you look for the name "Sterling" before you buy. When a mill supply man offers you check straps insist on seeing the name Bondaron. Unless the name is there you won't get the genuine—and if you don't get the genuine you *can't* get Bondaron service.

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Leather Curriers and Manufacturers of Belting and Textile Leathers

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HIGH SPEED WARPING made even more EFFECTIVE!

High-speed warping came because of sharp competition, and with it came the urgent need for a beam especially designed to stand the stresses. Just as you can speed up any old rattle-trap warper, so you can use any old section beams—until they fall apart with the rough going *and you lose a warp.* Which won't be long.

Washburn tackled the problem from YOUR side of the picture. This organization recognized that THE beam should stand the strains of *sudden stop motion*, be of light weight but remarkably strong, have heads that would stay locked and yet with removable shafts, be absolutely concentric and always in balance and, for those who use both standard and high speeds, a beam that suits both well. Here is the answer—and it costs less. Write for prices.

Note the construction of this beam.

Made of bone-dry, A. No. 1, Northern Cork Pine. Has 8 interlocking staves *supported* on strut-brace hubs. Patented clutch and nut locking devices produce coincidental locking of all parts by merely assembling the beam; a unique and positive safeguard.

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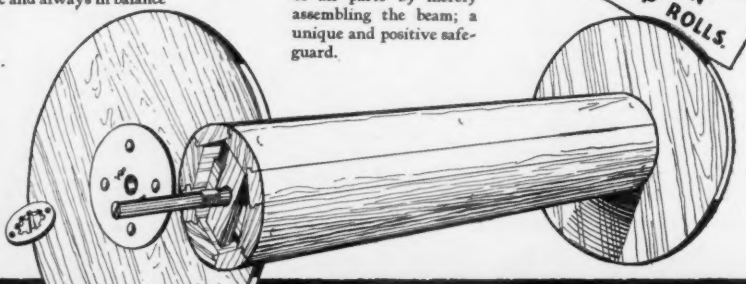

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Successors to the well known Firms which were established 1915-1917

Tower Manufacturing Co., Inc. (Sulphur Color Dept.) The Chemical Company of America, Inc., New England Aniline Works, Inc.

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S. ISERMANN, President

soda. Circulate ten minute *outside in* and ten minutes *inside out*. Enter prepared dyestuffs through cloth at 100-120 degrees F., bringing slowly to 200 degrees F. in 40 minutes. Run twenty minutes and then add slowly Glauber's salt (preferred), and run twenty minutes more at 200 degrees F. The bath should be exhausted sufficiently for the sample to be taken, dried and matched against the shade desired. If necessary shading is required, the dyebath can be allowed to cool to 180 degrees and the necessary prepared dyestuff entered, run twenty minutes and sample again. If the shade is satisfactory, the dyebath is dropped, two or three cold washes given and the yarn pulled out of the machine and hydro-extracted for the necessary time, and placed in dryers.

The correct operation of the machine on stated periods, outside in and inside out, is absolutely necessary—eight minutes outside in and seven minutes on the inside out is considered the most satisfactory method in use. The machine, pump, and pipe work must be kept in first-class repair, for when a package dyeing machine begins to "pump air," as the mill man calls it, unless this trouble is removed by repairing, the yarn being dyed is usually streaked by pressure coming unevenly through the yarn.

Another point is if the yarn is to be used for weaving, a plain wash and then out to the extractor is sufficient where the shade is matched. For knitting it is best to add one per cent of some good grade of finishing and softening oil to the bath, and then go to the extractor and dryer.

A point in connection with repairing the machine is to see that the spindles are tight and that the springs under the cop covers sit true and square on top of the package of yarn.

D. P. (TENN.)

Some Causes of Curved and Crooked Cloth.

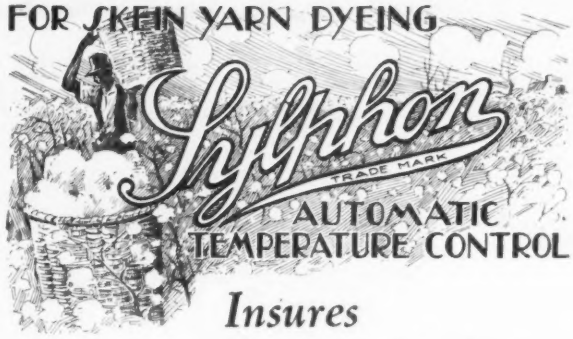
EDITOR COTTON:

In a recent issue, "L. B. (Ga.)" brought up the question of cloth which curves when laid out on the cutting table, and wished some opinions as to how to prevent this, it apparently coming from a difference in the length of the selvages of the goods.

It is natural to assume that one of these selvages had been stretched somewhere, so that if we start at the warper and follow the goods through the mill, we will probably find the trouble.

The section beam may be a little wider than the warper cylinder, which would allow one selvage to pile higher than the other. The warp might not be laid evenly in the warper comb, or the comb might not be adjusted properly. A bent spindle of the section beam might contribute to this defect.

Going to the slasher, the size box may be out of line with the cylinders, or the creel might be out of line with the size box. The immersion roll might be higher on one side than on the other, as much as one or two teeth of the rack which runs it up and down, or the spindles and bearings might be badly worn. I have seen slasher cylinders that were badly bulged on one side, causing the yarn to roll. The loom beam may be a little wider than the slasher press roll, especially if a piece of ordinary iron pipe is used for the press roll instead of the regular expansion roll. Of course if this press roll is shorter than the distance between the heads of the loom beam, the yarn is not pressed evenly the whole length of the loom beam and will doubtless be



No. 931 Sylphon Regulator

for controlling temperatures of liquids. Can be installed in any position. Valve sizes ½ inch to 2½ inches, inclusive.

Insures Uniform Colors—Makes Color Duplication Easy!

WHATEVER dyes you use, Sylphon automatic and exact temperature control is necessary to get uniform colors, or readily duplicate a color exactly. When your dyeing operation involves a series of temperature changes, there is a Sylphon Regulator which will enable you to get these exact temperatures wherever you need them.

Sylphon Regulators insure the maintenance of these temperatures and avoid waste of steam, costs for supervising labor, inefficient production—wastes and seconds and poor quality product.

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Sylphon Automatic Control is particularly desirable in dyeing in package form of made-up cops and tubes. It keeps the solution at the right temperature to insure perfectly dissolved solutions and proper penetration of dyes throughout the process.

We will be pleased to supply special information relative to Sylphon Temperature control for individual requirements. Use the coupon or write if you prefer.

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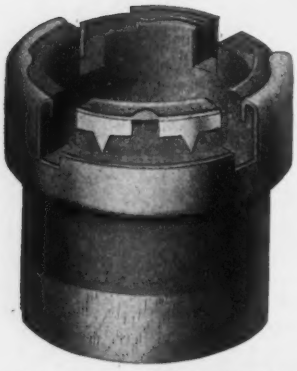
BOBBINS & SHUTTLES



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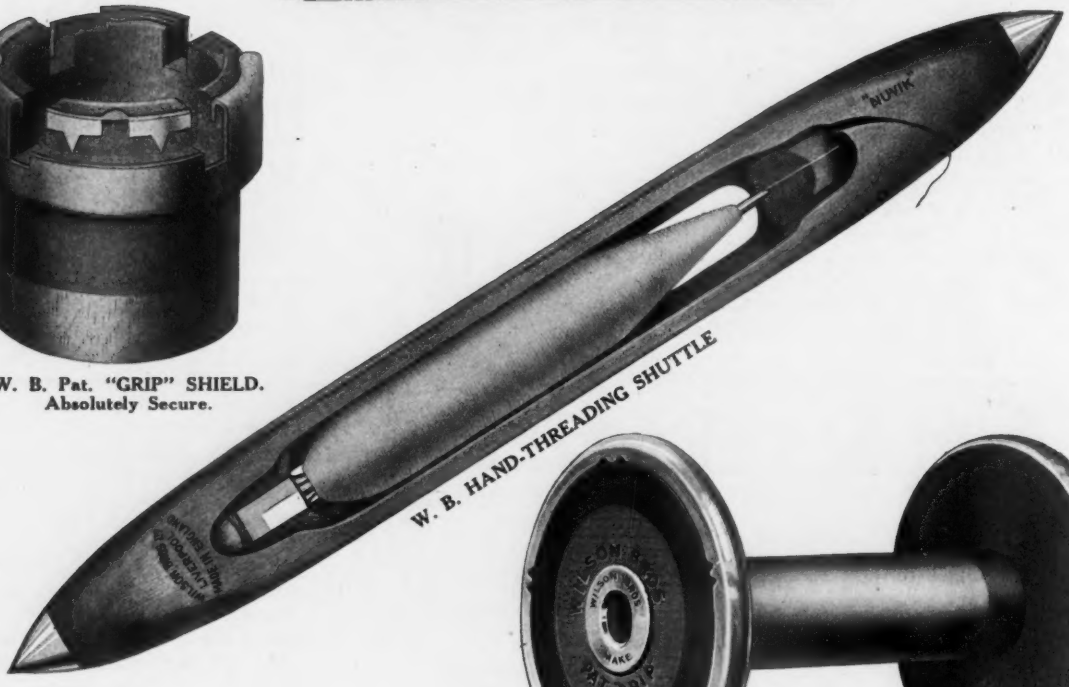
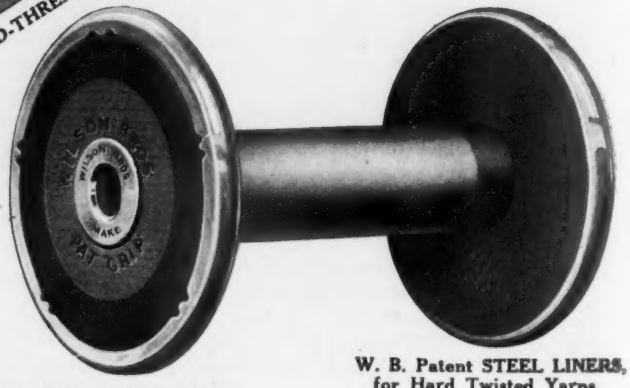


W. B. HAND-THREADING SHUTTLE



W. B. Patent STEEL LINERS,
for Hard Twisted Yarns.

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RING BOBBINS,
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Largest Makers in the World.

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GARSTON,
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—*Agents* **LEIGH & BUTLER,** *Boston, Mass., U. S. A.*

higher on one side than on the other, thus stretching the yarn along that selvage.

I suppose of course that the man asking this question has looked into the adjustment of his loom in regard to the hanging of the harness, the equal length of the Pitman arms, whether or not the rocker shaft bearings were worn, whether the whip roller and sand rollers are level and in line with the lay, as any of these might contribute to the trouble he is having. CONTRIBUTOR No. 4053.

EDITOR COTTON:

I note the problem "L. D. (Ga.)" submitted in a recent issue about crooked or curved cloth. Strange to say, it is only in the last few years that I have heard of any complaints on tight or loose sides to the average cloth; of course I have had trouble with bowed cloth on ducks, but about six months ago I had a piece of cloth just like the one "L. D." described. In fact I had two at about the same time. I worked all over the loom and got it right, but did not know what did it. Later I got another one, and when I went to that loom I saw it was a new warp and the cloth was right, then I went back to investigate the first loom and found that when that went right it was a new warp, so I am about ready to say it is slack or tight ends on one side of the warper, but as yet I am not sure.

There is one thing that will tend to do it, and that is smooth fillet on the take-up roll holding better on one side than the other. I would advise lining up everything level on the loom, and then going back to the warpers and watching for tight or slack sides. At some places they put full spools on the sides or run out pieces of spools on the sides of the creel. This is bad business because the small spools and the full ones have different momentum on the stopping of the warper.

Another thing that will cause crooked cloth is the press roll on the slasher not coming out to full length. This will leave two inches or less on one side not pressing until the slasher man moves it over. After being moved over, it will run all right for a while and then it will get back in the wrong position again. This type of press roll is one that lengthens out to fill the space between the beam heads. The spring was either weak or broken. I would consider it a great favor to get "L. D.'s" ideas if he finds out the cause of his trouble. O. R. (ALA.)

Interview on Cellulose Acetate Methods.

Representatives of the Celanese Corporation of America have announced an interview with George W. Miles, a consulting chemist who has devoted considerable study to cellulose and its products, and who first developed a commercial acetate cellulose, regarding the general problems involved in the production of types of acetate cellulose yarn other than Celanese, and the originality and value of the Dreyfus patents and processes of that company. In his opinion, it is stated, the Dreyfus patents and processes were the first under which cellulose acetates, without major defects were produced. He pointed out that while the Doctors Dreyfus entered the field subsequently to his own entrance, "their patents and processes made possible for the first time the production of a commercially perfect product which enabled the artificial silk industry and the non-inflammable film and celluloid industries to produce finished products of great value." The statement includes a letter from Edward C. Worden, of Millburn, N. J., concurring in Mr. Miles opinion.

✓ Canvas baskets,
✓ trucks,
✓ and hampers
✓ designed for the textile industry

Rockweave Mills has produced a complete line of canvas containers for the especial requirements of the textile industry. Included are baskets for general conveying or storing of materials, special doff trucks and doff baskets, special steaming baskets with brass eyelets for use in the conditioning room, special roving trucks for the handling of the heavier spools and bobbins from the roving frame.

All are remarkably well constructed for lightness and strength. All are covered with No. 1 Triumph Duck made by Callaway Mills, associated with Rockweave Mills. Accessories, such as casters, handles, hinges, and eyelets are of high quality and are installed to give lasting and satisfying service.

Dimensions and prices will be furnished at your request either by us or our representatives. If unusual sizes or shapes are desired Rockweave Mills can meet your specifications with economy and promptness.

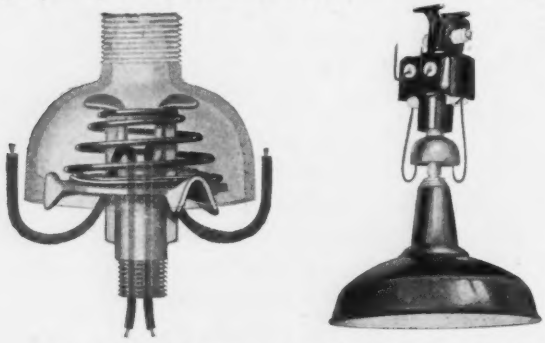
ROCKWEAVE MILLS
Canvas Products Department,
DIVISION OF CALLAWAY MILLS,
LA GRANGE, GA.

Vibration in Lights.

MEASURES of reducing the damage caused by vibration in connection with incandescent lamps should be of interest to textile operating executives. The following abstracts from a paper by Allison J. Thompson, of the Thompson Electric Co., discuss this subject:

"Vibration presents a very real problem in industrial lighting, due to the extremely delicate structure of the light-producing filament in the incandescent lamp. There are two types of vibration which are particularly destructive to the lamp filament: the first, and apparently the most common, has a short wave-length with a high intensity, producing a sharp impact, jolt or jar which breaks the lamp filament—just as it is the sharp, quick blow that shatters molasses candy. The second type of vibration has a very short wave-length of high and rhythmic frequency—producing a molecular agitation or disturbance in the lamp filament which in time will cause it to break—just as a piece of wire may be broken by bending it back and forth a sufficient number of times.

"Vibration may be produced by a single blow or impact, or by the operation of a power hammer in a forge



At the left is a phantom view of the Thompson shock absorber; at the right, the shock absorber applied between hanger and lamp.

shop, jarring the ground around it, or by the impact of a falling body, by an explosion, or by any sort of impulse which jars or jolts a resisting, elastic body or supporting medium. Vibration produced by any such means will die out as it proceeds in its course, like ripples on the water.

"Or, it may be produced by a cumulative synchronism of impulses which will have the effect of augmenting the vibration, whether it be caused by a dog trotting over a more or less flexible bridge, or by a series of impacts produced by machinery in operation. Such vibration will proceed through the structure, or supporting medium, developing a momentum until it attains its maximum, and then will die out.

"When the vibrating structure adjacent to the lamp is more or less compact and rigid, as in the case of various kinds of machinery, this second type of vibration may develop a very short wavelength of high and rhythmic frequency, exceedingly destructive to the lamp filament. The harder, more rigid or elastic the opposing body the farther the vibration will carry—as may be illustrated by striking the end of a steel pipe with a hammer, and applying the same kind of a blow to the end of a length of garden hose. When a lamp is rigidly bracketed close to a vibrating heavy structure, such as a thick, solid wall or column of masonry or concrete, it will receive the full effect and force of whatever vibration is in the heavy structure. It follows that the farther the lamp can be removed from the source of vibration, and the greater the resilience of the supporting medium, the longer will be the wave-lengths and the less destructive will be the effect of the vibration upon the lamp filament."

For this purpose, Mr. Thompson points out in continuing, a number of "shock absorber" devices have been developed. In this connection, he says the weight of the lamp fixture is important; the heavier the lamp fixture is, the more inertia it will have with which to "back up" or resist vibration. He then describes the shock absorbing devices manufactured by The Thompson Electric Co., 1438 West 9th St., Cleveland, Ohio, illustrated herewith. This device has four parts, a spring and three malleable castings, with no screws or bolts. The parts are so interlocked in the assembly, it is pointed out, that if the spring should ever become rusty and break, it would not be possible for the lamp to fall. The spring is of conical, or bee-hive form, in which the coils nest down inside of each other, providing a floating pivoted support for the lamp fixture. The shock absorber is made in two sizes; one furnished with a light or heavy spring for fixtures ranging from 1½ to 5 pounds, and from 3 to 8 pounds respectively. The larger model supports weights ranging from 5 to 12 pounds, and 9 to 30 pounds respectively. Both models may be applied with or without the Thompson safety lowering switch or hanger, a device for lowering lamps away from the electric circuit for cleaning purposes, etc.

Remedies for Rust on Rings and Rails.

EDITOR COTTON:

In reply to the question of "Contributor No. 4038," it is rather hard to say, without knowing the weather and water conditions, just what is causing his rings and ring rails to rust.

In Texas, the climate runs to long dry spells and then sometimes a long wet spell. We have had some trouble with rust on the rails of frames near the spinning room doors, especially where the doors are so located as to cause a draft of damp air into the room during rainy days. During such times we watch our doors and keep them shut.

A damp week-end in the winter time used to play havoc with us when we started up on Monday, until we learned to keep steam in the mill when we had a big rain. Our watchman is instructed that when we have a rain on Saturday or Sunday to keep just enough steam in the radiators in the card room and spinning room to keep them dry. It is surprising what a difference this will make on Monday mornings.

Sometimes a humidifier can be spraying drops of water instead of a fine mist; this will make machinery rust. There is a certain type of humidifier where the water is thrown against a circle of small points or teeth to break it up into a fine spray. If these teeth are not cleaned frequently lint will gather on the points. This lint collects the water until a heavy drop is formed, which is finally blown off to fall on a machine as a drop of water. This causes rust. The answer is frequent cleaning of humidifiers.

I am inclined to think, however, that the greatest trouble "Contributor No. 4038" is having is caused by the kind of water he has in his humidifiers. He indicates this in his next question. There are some waters, we have them

"That's why!" said the TREASURER

"We'll get more value in *Spools*"

THE mill treasurer returned from a visit to a neighboring mill with a cheerful look on his face. "I found the solution to our spool problem over there," he remarked to his assistant.

"My friend Allen is using Lestershire Fibre Spools. He is getting good results. Much better than we are, in fact. By equipping with Lestershires he is not only effecting spool economies but is securing a better quality of production.

"He showed me that Lestershires are more even, run truer and are uniform in all dimensions. In every detail of construction they are more accurate, he pointed out, and they represent extra value also through the selection of superior fibre and longer dogwood bushings. That's why" said the Treasurer, "we'll start using Lestershires and get this extra value too."

Satisfaction Guaranteed

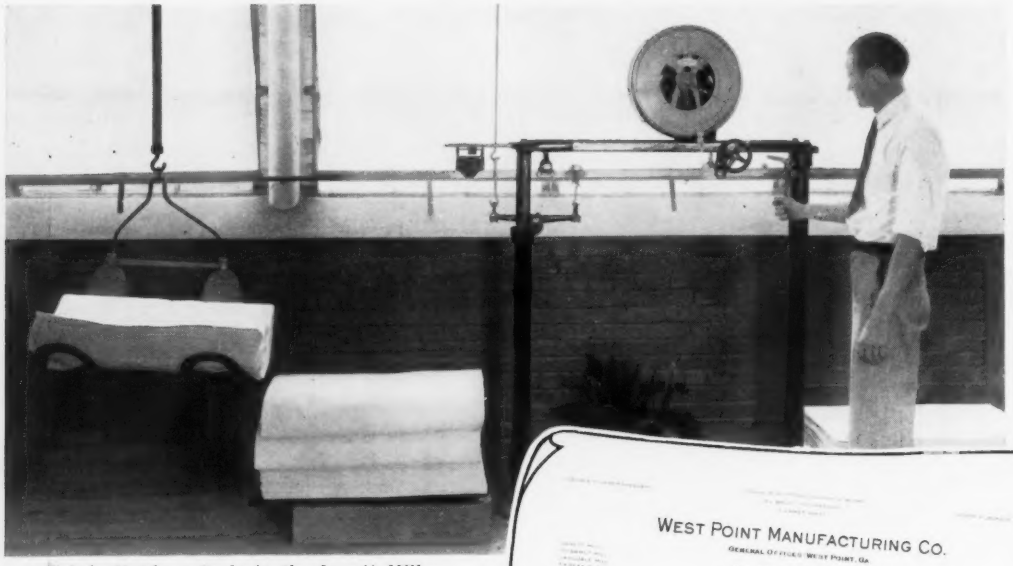
LESTERSHIRE SPOOL & MFG. CO.

TRADE FIBRE SPOOLS MARK

146 Baldwin St., Johnson City, N. Y.

Southern Office
519 Johnston Building
Charlotte, N. C.

What An Authority Says of the Toledo Yardage Scale

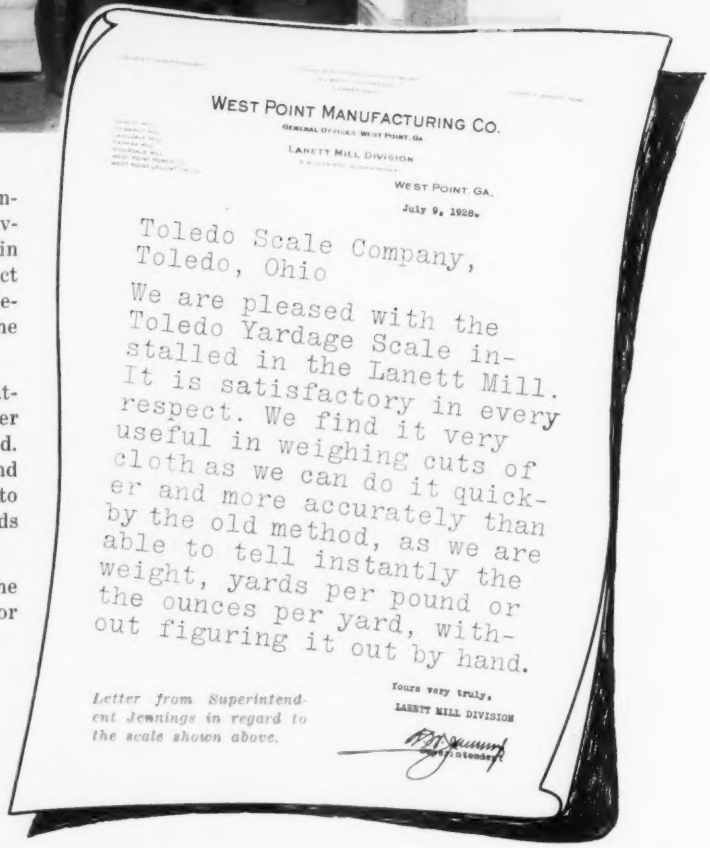


Toledo Yardage Scale in the Lanett Mill.

KNOWING the reputation of R. W. Jennings as a practical mill man, and having probably heard him as a headliner in textile conventions, you will value this direct word from him in regard to the benefits derived by the great Lanett Mill from the Toledo Cotton Mill Yardage Scale.

In plain figures on a dial this scale automatically shows the total weight, the weight per yard and the number of yards to the pound. It eliminates figuring, which saves time and prevents human error, and makes it easy to insure the exact weight-quality of all goods shipped from your mill.

A Toledo Scale man will gladly give you the full particulars. Just mail the coupon or write us.



WEST POINT MANUFACTURING CO.
GENERAL OFFICES: WEST POINT, GA.
LANETT MILL DIVISION

WEST POINT, GA.
July 9, 1928.

Toledo Scale Company,
Toledo, Ohio

We are pleased with the Toledo Yardage Scale installed in the Lanett Mill. It is satisfactory in every respect. We find it very useful in weighing cuts of cloth as we can do it quicker and more accurately than by the old method, as we are able to tell instantly the weight, yards per pound or the ounces per yard, without figuring it out by hand.

Yours very truly,
LANETT MILL DIVISION
Superintendent

Letter from Superintendent Jennings in regard to the scale shown above.

TOLEDO SCALE COMPANY

TOLEDO, OHIO
Canadian Toledo Scale Company, Windsor, Ont.

Clip to your letterhead and mail

Toledo Scale Company,
Toledo, Ohio

☐ Please have your representative call with reference to a yardage scale.

☐ Please send us information about scales for_____

_____

_____Your name, please.

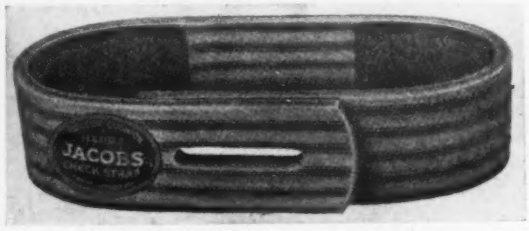
here in our Texas artesian wells, that contain minerals that react with iron to cause corrosion or rust. This mineral water attacks the machinery and piping with disastrous effects. It not only deposits a scale in boiler and water pipes, but it eats up the pipes. The moisture put out by the humidifiers naturally condenses slightly on the machines, and in doing so deposits out the mineral. This alkali deposit is probably what "Contributor 4038" finds on his ring travelers. It usually appears as a fine white or gray powder on the ring rails. The traveler keeps it cut off the ring itself, but it will collect on the traveler.

The reason why this is so noticeable on the flyers and ring rails is because they are unpainted and therefore unprotected, as far as the water is concerned. The heads of the frames, the box rails, etc., are all painted and so are not subject to corrosive action. The flyers and ring rails are bare, hence the rust and mineral deposit.

The only remedy I know of is to eliminate the alkali from the water, as the contributor suggests, by putting something in the humidifier tank. What he would have to put in would be determined by the mineral content of the water he is using. I would suggest that the simplest plan is to write one of the big chemical companies which make a business of water rectification, and ask for a sample container. He can then send them a sample of his humidifier water. They will make an analysis free of charge, and they could then suggest some compound which would eliminate this difficulty. V. H. (TEXAS).

A New Canvas Check Strap for Looms.

PRODUCTS extending the use of cotton are always of interest to cotton manufacturers—especially so when these products are in turn to be utilized within the industry itself. A new synthetic adhesive has been perfected which, it is stated, will glue canvas together with the result that the layers adhered are as flexible as the canvas itself. The E. H. Jacobs Mfg. Co., Danielson, Conn., have obtained

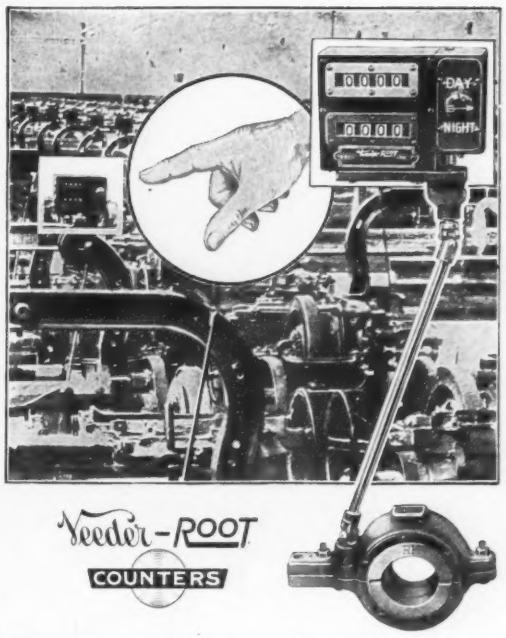


New Jacobs Canvas Check Strap.

the exclusive right to use this new chemical compound in the manufacture of loom supplies, it is announced, and the first Jacobs product to be made from this new glue is a flexible canvas check strap, shown in the accompanying illustration. The company plans later to manufacture a full line of canvas strapping for all types of looms.

Flexibility and tensile strength without stretch are claimed for this type of product, because of its construction. In this check strap the Jacobs company have incorporated the roller cushion feature used on their lug straps; this cushion, at each end of the strap, being designed to insure a positive easy-picking check.

Send your problem to the discussion department.



Veeder-ROOT COUNTERS

Points Out the Loom that Lags

Pick out the loom that's running short time, and point it out to the weaver. Pick it out by the record of *picks*—on the dial of a Veeder-Root Pick Counter.

Perhaps a loom that should make 160 picks per minute is showing but 96 per minute. That shows it is going but 60% of the running-time. Then it's time your overseer stepped in and stepped-up the pace of the weaver.

Make it *easy* for your overseer to check-up each loom each day. So he can compare results from *all* sections of looms. Then if results are poor in one section, he can go to that section and locate the looms that lag.

No other way of watching production gives you such accurate pointers on *output* as Veeder-Root Pick Counters give you automatically.

Write for Textile Counter booklet C, or ask for a trial of the Counters.

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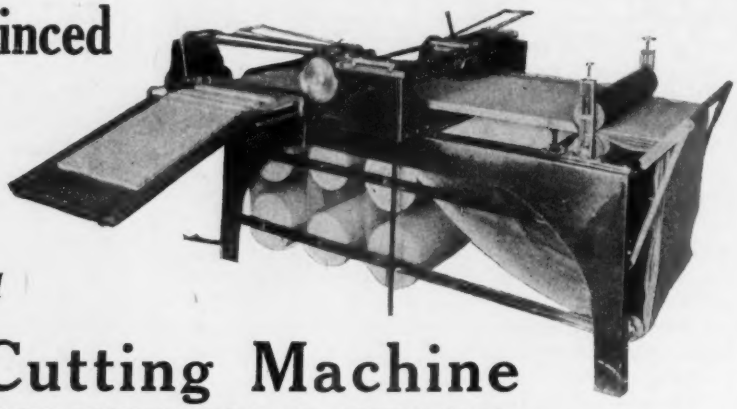

H-K Cloth Cutting Machine

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Capacity—Cuts 100,000 cloths per day of Dewey's Gray and 180,000 of high quality white cloth.

Operation—Operated by one person—a lady if desired. No experience required.

Accuracy—It is 100% more accurate and leaves 100% cleaner edge than hand-cut cloths. Adds much to the quality of rolls.

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Creeling—Creeled by inserting creel rods through roll of cloth and placing creel under machine. As shown in cut, cloth passes to rear of machine through a comber, then between rolls which grip cloth, packing and delivering it to a belt which conveys it to a stripping blade. As strips pass from stripper they slide upon a metal sheet elevated just above rollers on blocker. By lowering this sheet strips are conveyed to blocking blade by these rolls. As strips are blocked they pass upon a sloping metal sheet as shown in cut.

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Terms if Desired.

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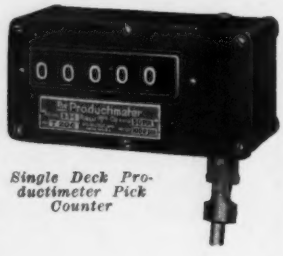

Single Deck Productimeter Pick Counter

Pay them for the exact amount woven without guessing, suspicion or argument by the positive accurate records provided by Productimeter Pick Counters. Simply set rate per hundred or thousand picks woven, depending on material and style of weaving, and compute wages from counter readings. Provide incentive to keep looms running as weaver can check his earnings himself. Remove temptation to "kick pick gear" as pay is only for actual picks woven.

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Write for Bulletin "Pick Counters—Their Application and Use" and Catalog Section No. 5 giving complete description.

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An important feature of our loom harnesses is their appearance and their "feel." Their smooth finish and their freedom from defects show that they will weave well, and their soft pliable "feel" shows that they are tough and elastic and will therefore wear well.

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Preventing Curling in Verticals.

EDITOR COTTON:

I notice the problem of "Contributor No. 3056" with reference to curled and twisted cotton in the vertical openers, as published in the April issue. The vertical opener does open, and although some may say it doesn't clean, it does. I would suggest to this man that some of his cotton, especially the Strict Middling and Middling, is getting rougher treatment than it needs. Can he separate his Strict Low from the others and run it through the two vertical openers and run the bales of the other grades through a single vertical? Has he tried a perforated screen instead of the grids—the grids do have a tendency to curl cotton of the longer staples. Has he raised the beater a little, or tried lowering it? Just the other day I was speaking to a machine man and he happened to say that he was in one mill where they had trouble and the shop made the bottom blades or fins twice as wide, which sent the cotton up faster. Is he sure the fans or the draft is not too much, and possibly is rolling the cotton?

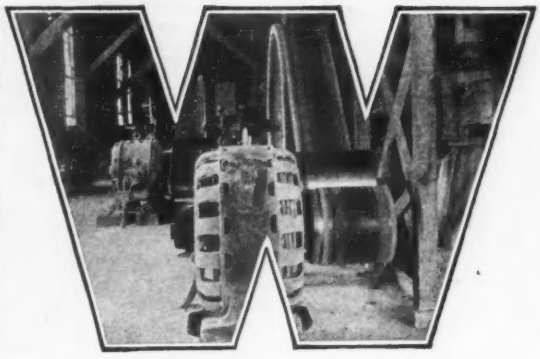
I believe his opener settings are causing some of the trouble, although some mills set ¾-inch between the grids and beater fingers with a speed of 500 to 700 r.p.m. His Buckley speed of 800 r.p.m. sounds rather high, especially if it is either a 30-inch or a 40-inch, which generally are speeded about 650 or 550 r.p.m. He did not give his blows per inch, and possibly he is beating his stock too much. 20 blows on the second breaker beater, and 30 to 40 blows on the finisher, are sufficient. A Kirschner beater in the finisher will give a better looking lap than a blade beater, although with the Kirschner, the yarn is slightly more even than when a blade beater is used. Y. F. (R. I.)

The Value of Improved Equipment.

EDITOR COTTON:

The question of the substitution of automatic and high speed machinery for hand labor is one of the major activities of management today. Recently the writer was in conversation with a gentleman who made the first trip through the South with the automatic knotter. These were selling for forty dollars each at that time. Spooler hands were drawing around six dollars a week. The usual sales resistance which he met was the statement that the cost of one knotter would hire a spooler hand for over six weeks. It is evident that there was considerable argument on the other side, but the point the mill men took at that time is taken today on similar problems brought to their attention.

For the sake of clearness, consider an extreme example on the other side of the question. We will assume that a mill is planning to install an elevator. It will require a five-horsepower motor to operate this elevator and it will cost three thousand dollars for the installation. One man at twelve dollars per week will be required as elevator operator. To add up: Three thousand dollars at six per cent is $180 per year. The elevator will depreciate $500 per year, which added to the $624 operating cost and $200 for current will total $1504 to use the elevator. Now, as we have said, we will take an extreme example. A windlass will be placed to raise and lower the elevator instead of an electric motor. Two men will be employed to turn this windlass. It will be assumed that they could move the elevator as fast as the motor, but this is doubtful. They will cost $1248 per year and save $200 current bill and



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to realize on the savings from an installation of the **"U. G." Automatic Belt Contactor** for short center belt drives. The savings start immediately. Here are a few of the advantages:

1. SAVES BELTING, because the amount required may be much less than for an open drive and eliminates all belt slippage.
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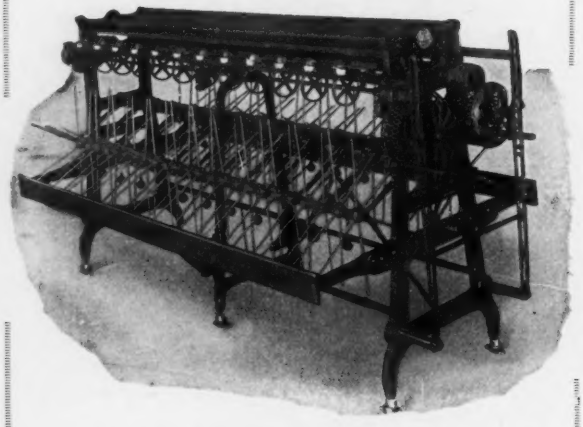

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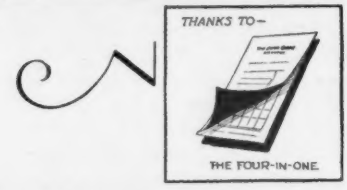

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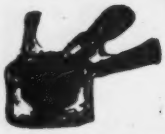

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about $200 per year in first cost and depreciation. To balance accounts we save $400 per year with the windlass and spend $1248, making a net loss of $824 per year.

There are no mill managers today who would hesitate to buy an electric motor or some power drive for an elevator. There are many of them who hesitate to buy other machinery which will replace labor. They are not to be censured, for they are members of the human family and the human family has always shied at replacing the wonderful member of this family with a machine whose movements must be directed by a human being. We often hear the statement made that such-and-such a machine will think. People will stand in awe at its wonderful ability to replace the tedious physical and even mental activity of a man, but try to sell them one for their own use and you will hear a thousand reasons advanced as to why they have no need for this exquisite mechanism.

Overlooking the usual replies like, "It needs to be proved by the industry first", or "it may be all right, but I am getting along all right", we consider the reply of the more intelligent man. He will probably say that you are undertaking to substitute capital invested for labor cost, and capital costs money to use just like labor. This is the crux of human advancement. Our histories speak of the machine age and the fearful struggles between capital and labor of that time. This spirit will surge in the hearts of man until the end of time and we must study how to combat it so as to reduce the friction involved. The most wonderful invention of all time is the wheel. Nothing that man will ever conceive will equal the wheel for the profound scope of its effect on civilization. It is not known by whom this invention was conceived. It is well known that when the first wheel was for sale that tremendous sales resistance was encountered. Perhaps hard feeling was begun between Cain and Abel over the wheel. Cain said that he would buy one when he saw some of his neighbors use them and approve them. Abel said that the wheel looked feasible and he would take two on trial. He put them on his best sled and found the pulling resistance suprisingly lowered. It began to prove out that he had made a wise investment. Fortunately Abel was not like that mill manager who told a salesman he never bought anything new until he saw it tried by someone else first. Everybody began to buy wheels and after the first "I told you so's" were forgotten, wheels were taken as a matter of course. There were those who talked of the replaced sled pullers and what they were going to do for a living, in time, though, these sled pullers had turned into wheel makers and life was better.

Thus the march of industry has ever been pushed forward by the weighing of the cost of capital and the cost of labor.

C. L. (GA.)

Pamphlets on New Newport Products.

Leaflets describing twelve new dye products developed by Newport Chemical Works, Inc., Passaic, New Jersey, and containing swatch bows showing the shades of these colors on various materials have been issued by the manufacturers. Accompanying these leaflets is another on which Newport direct colors are classified by their speeds of exhaustion from the dye bath. This latter information is for use in the proper selection of colors for use in combination shades on rayon.

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Customer's voice: The last shipment of Picker Sticks you sent us — it's not up-to-snuff.

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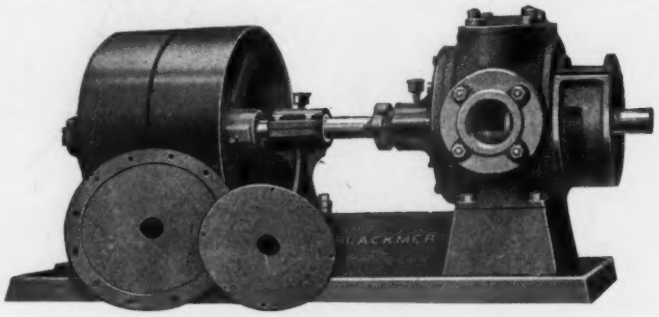

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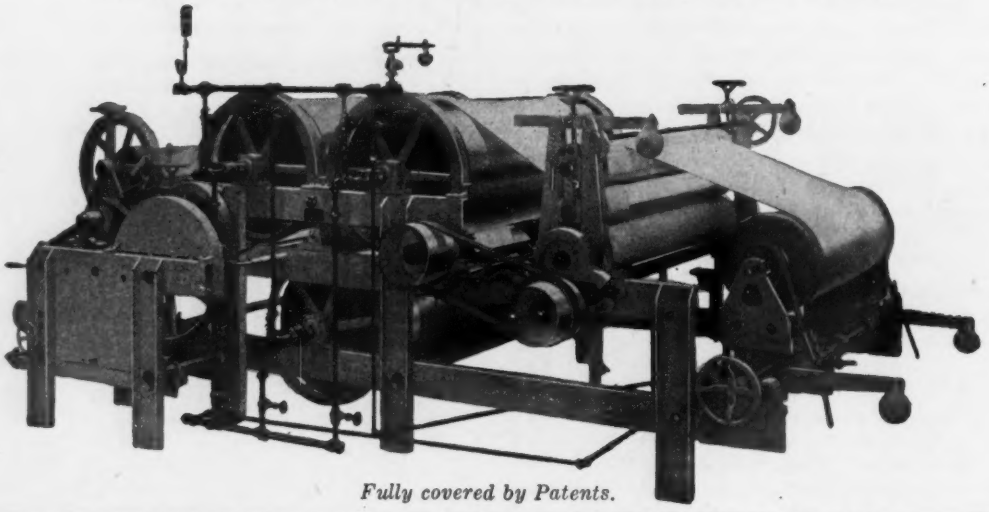

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Using Special Hands for Cleaning.

EDITOR COTTON:

As a new subscriber to COTTON, I would like to offer some suggestions as to using special hands for cleaning in spinning, in response to the question from "B.T.(Ala.)", which appeared in the April issue.

First, I would like to say my experience is practical and so I do not want him to judge me as a fellow full of theory, and therefore possibly say I did not know my onions. I have had the privilege of assisting with the first multiple systems put in mills where the different operations, carefully analyzed and experimented with over a long period, were finally accepted and have since proved to be both practical and well liked by the operatives.

The best way for "B.T." to really know what he is doing would be to start somewhere at the bottom instead of accepting *in toto* the formulas being offered by many. There are several formulae that are really practical, when used as a foundation, but remember, the man who accepts a thing like this for granted is going to make a mess of it.

Before I start explaining the method of procedure for this job analysis and time study work, I would like to answer a few of "B.T.'s" other questions on systems of cleaning and how often it should be done.

Of course he knows just as well as I do that stock made from low-grade cotton makes a roller beam, thread guide, rails, rolls and the rest of the machine dirtier than stock made from higher grade cotton. Also, a coarse count of yarn has more dirt per hour than a fine count. Local conditions also enter in—even though this might seem rather foolish as it formerly did to me—high ceiling, low ceiling, machine under or close to overhead drives; these all enter in to a small extent.

Now let's start on this matter of job analysis, for I might say in explanation that to spread out the work of operatives it is necessary first to determine how much they are really doing now and on that basis work out how much more they can take on. Get a stop watch (one in hundredths and not in seconds); look it over carefully and see whether you can follow your regular spinner for an hour or so and get accurate readings. When sure of yourself, make up a sheet and rule it in straight up and down sections of about ¾-inch,—and it will take several for one day's readings. This paper should be put on a board that can be carried comfortably on the arm, and in the corner of it there should be a hook or nail on which the watch is hung.

Now we are ready for symbols—there should be a symbol for every motion, with as few letters as possible. I suggest the following symbols:

MOTION OR OPERATION	SYMBOL
Piecing	P.
Creeling	C.
Picking Clearer	P. C.
Picking Top Roll	P.T.R.
Picking Bottom Roll	P.B.R.
Wiping off Thread Guides	W.T.G.
Wiping Roller Beam	W.R.B.
Wiping Rails	W.R.
Wiping Creel	W.C.
Walking	W.
Resting	R.

These few are mentioned as they are about all that will be used. It is important to know the symbols before relying upon them.

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Now, follow an average spinner for a whole week. As the watch is read and the first column on the paper is filled, skip a column or use the first, third, fifth, seventh, ninth, etc., for putting down the readings, and the alternate ones can be used for putting down the actual time for the operation. As the watch is read it would be best to put the first column reading down as .00, and put it at the bottom of the first column and go up instead of down, which will help in obtaining the time per operation. The reason why I say follow a spinner for a week is because each day will vary in the type and amount of work done, especially on Friday and Saturday.

Now, after the first week is completed, he can judge for himself if his cleaning was done properly, to produce the best and cleanest work; if not, why not do the cleaning a little more often and make another time study with the new cleaning system. After he has made the last time study of the operations as made by the average spinner, let us analyze to see what he has.

First, he has his time for creeling—he could have designated the number of rovings creeled on his sheet. Second, he had his piecing—he could also have designated the number of ends pieced. Third, he had his cleaning of different types. Fourth, he had walking, and fifth, resting.

He should next find the percentages of each. Now that he has made the time study and is satisfied with the cleaning, he must have noticed that the spinner was possibly overworked or had what appeared to be too much time for resting. But he should not forget to allow the spinner from 12 to 20 per cent for resting time. (I would not give a standard for a rest period, for there would be too many "No's" from the gallery.)

Supposing the spinner was over-worked. Let's see if we can remedy it and help her out. The best way to do it is to see if she had too many piecings at one time, or too many creelings at one time, or whether the roving was uneven in size, or whether the roving broke back considerably, or whether the doffers came around too early or too late.

In order to check on the reasons for the over-working of the spinner, we should make an end breakage test and determine why each end breaks. I haven't forgotten about the time study work or the cleaning, but maybe much of the cleaning was caused because the spinner could not get around in time and at the proper time for cleaning. We make an end breakage test over a period of a week, and with the following results: There are too many roving break-backs because of thick and thin places. The rovings are doffed unevenly in the card room, and run out before they should; then we also find one or two skewers are sticking through the top creel board and do not turn easily when roving is on the creel; then we find travelers are off —somebody skipped these frames—in large numbers; cracked rings cause uneven ballooning and say, did you notice those dry rolls and the loose cots, and the flannels appearing loose under the new cots!

I don't know whether any of this would apply at "B.T.'s" mill, but it does at mine, and we are trying to fix it up. In other words, the first time study will tell whether the spinner is over-worked. Then the end breakage test will show she is over-worked unnecessarily. We must overcome that unnecessary work by having the card room produce better roving and by getting the spinning frames in the best condition. He shouldn't say his frames are old—they fixed 1892 model machines in one mill I know. Machine conditions from the opening room up to and including the spinning room are the biggest factors in a multiple machine re-organization. I mentioned rolls, and I don't mean maybe. The roller man can be a big help, and he shouldn't be outside in the rain when it comes to being checked up on. I know one man who was so good to the mill that he put two and three small pieces of flannel on a roll in order to use up the pieces.

If the machines are in good condition, and the stock is good—with not too high a twist multiple—let's make our final time study. This time there should be some difference and the spinners should greet us with a smile. After the final time study is made, let's analyze the time. See how much creeling time, piecing time, walking, resting, cleaning, etc., and get it in percentage. This is merely an example, but suppose we have the following as a result of the study: Cleaning, 10 per cent; creeling, 50 per cent; piecing, 30 per cent; walking, 5 per cent; and resting, 5 per cent.

Now we want to start the new multiple system or the spreading out system. First allow the creelers, cleaners, piecers, the same amount of time for resting, if possible. We see the piecing took only 30 per cent of the spinner's time, so allowing the 30 per cent and about 10 per cent for resting, this gives 40 per cent for piecing and resting; now let's say 10 per cent for walking, which gives only 50 per cent as a total, so if we want to experiment, the spinner should be able to take care of twice as many frames or sides if put on piecing. Now, in figuring the creeler's sides, it would be best to allow a little more time for walking, and the same with the cleaners.

"B.T." didn't ask for all of this, but he did ask some things which I don't believe anyone is coming right out and tell him. One mill I know of that really was a big success with this studied their operatives for over two years before they were sure of themselves. When this system is planned correctly, no operative does any work than that to which they are assigned—a creeler simply creels roving; a piecer pieces and a cleaner merely cleans. The best method to use for the cleaner is a regular time paper which tells when to start each motion, and when to complete it; also when to rest. I would say offhand that a piecer will take care of 2½ times as many sides, a cleaner a little more than that, and a creeler more than three times as much.

Y. T. (R. I.)

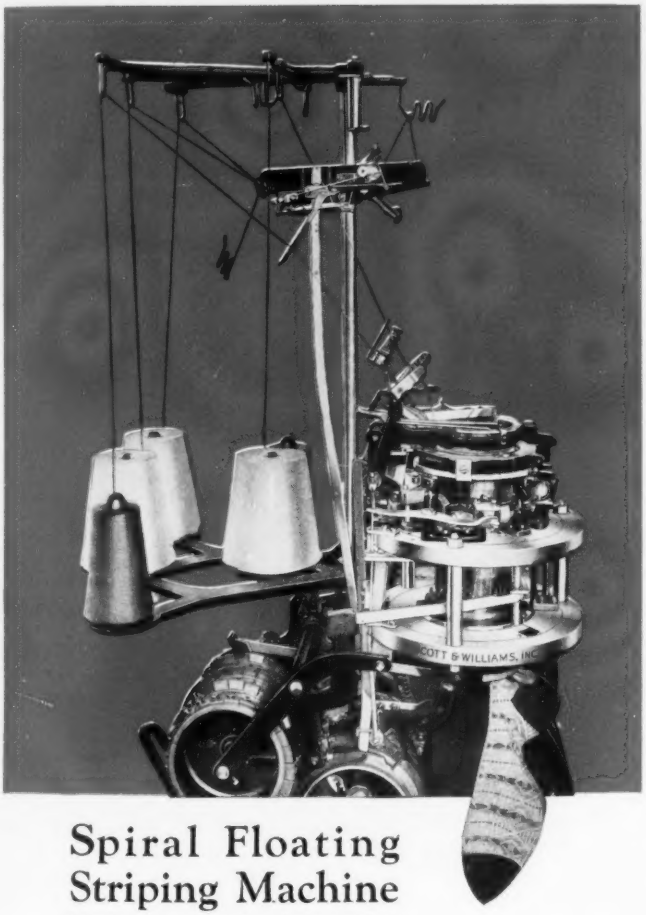
A New Method of Trade-Marking.

The American Trade Mark Corporation, 254-256 West 31st Street, New York City, announce the perfection of an improved method of applying trade marks, identification marks, truth marks, and other marks of recognition to fabrics of a woven, knitted, or felted character. It is stated that the "Vulcanart" method, the name by which it is known, combines the use of a specially treated and constructed paper and inking materials prepared according to an exclusive formula by the American Trade Mark Corporation. The makers claim that by the use of these materials less heat energy is required than with the dry transfer, thus more rapid application is obtained, and scorching or burning of fabrics is eliminated.

Information on Lubrication.

E. F. Houghton & Co., Philadelphia, Pa., have just published a new booklet called "Lubrication for Safety and Economy." It explains in detail why a proper oil feed is essential to the greatest economy in lubrication.

Knitting Section



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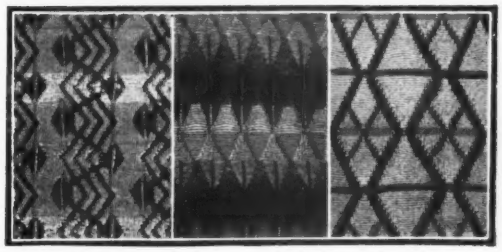
Fancy effects produced by the well known floating pattern system

THIS new machine represents the highest type of equipment for obtaining fancy effects. The horizontal striping mechanism can be arranged to control either the facing yarn or the backing yarn. Two-color stockings can be knit with plain sole and high heel.

This machine can be equipped with as many as six yarn changing fingers, which gives a range of five different colors under control of the pattern mechanism, exclusive of heel and toe colors.



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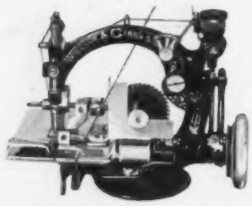
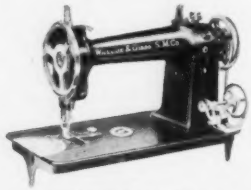
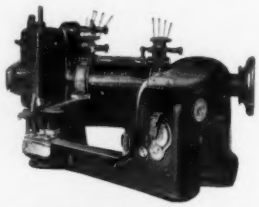


Shell Scalloping Machine



Lockstitch Machine

Overlock Seaming and Hemming Machine



Flatlock Machine

SOLE UNITED STATES AND CANADIAN AGENTS FOR CORNELY AND UNIART EMBROIDERY MACHINES

Training Hosiery Dyehouse Operatives

Instruction in Keeping Records, Weighing Up of the Dyestuffs, and the Importance of Uniformity and Standards

By Charles B. Ordway
Part Two

IN THE previous article of this series, the details of the laboratory and equipment, testing new dyestuffs, processes, etc., in training dyehouse operatives, were covered. Resuming the discussion of our outline, we shall discuss in this issue the keeping of records of formulae, processes and experiments, and the details of the weighing up room for dyestuffs.

Records of Formulae, Processes, Etc.

The keeping of the formulae, processing and experimental records can be looked after by the head dyer and his assistant. This can be placed under the various heads—dip-dyeing formula, mercerized cotton, half-silk, men's and women's, and three-fiber hosiery, one-, two-, three- and four-strand pure silk; cross-dyeing formulae; bleaching; degumming and boiling out formulae; and methods used. Small cards can be printed for the various types of records necessary, and the ones shown in Fig. 3, Fig. 4 and Fig. 5, will give a suggestion as to a desirable make-up for these forms. All silk and three-fiber or three-strand pure silk are dyed by the two-bath instead of the one-bath method.

DYEING FORMULA
SILK STYLE 41 MISSES

SHADE Chateau
.0055% Benzo F. Orange 2R.L
.002% Diabrune Orange F.
.003% Solstine Black LA
.04% Silk Orange 2RL
.005% Brilliant Milling Red R
.01% Silk Black BR
Enter Degummed Hosiery @ 120° in dyebath. Raise slowly to 190-200° F.
5% Glauber's Salt added in solution slowly
Run 20 minutes @ 190-200. Sample finish - ½ softening on #10 @ 100°

FIG. 3

BLEACHING AND DEGUMMING-ONE-BATH

PROCESS - Liquid Peroxide
STYLE - Half Silk

____% LIQUID PEROXIDE
____% SILICATE OF SODA
____% DEGUMMING OIL - SOAP
____% TRI-SODIUM PHOSPHATE-SODA ASH

TIME 1 hour
TEMPERATURE: Start at 140°; to 190° F.
FINISH 2 hot washes, 1 lukewarm

____% SOFTENER OIL - SOAP
____% BLUING - ACETIC ACID

FIG. 4

These formula and processing cards can be filed and kept for any possible corrections that are necessary. The laboratory clerk or helper can keep this file and all formulae can be checked onto a chemical or drug slip for the specified lots of hosiery as they come through the mill. This slip can then be taken to the weighing-up or scales room. There should be two sets of records kept; one retained in the laboratory and dyehouse, and the other placed in a fireproof box in the main mill office so as to free the mill of a great fire hazard and possible loss of formulae for all bleaching, dyeing and processing. It is best for the dyehouse to have separate tickets like the one shown in Fig. 6, where a record of all dyestuffs, chemicals and oils is kept on file similar to a formula card. Then the additions of dyestuffs are noted on this slip and all corrections can be made in quick order by the textile chemist or dyer. The weigher or balance operator will check against each product weighed out.

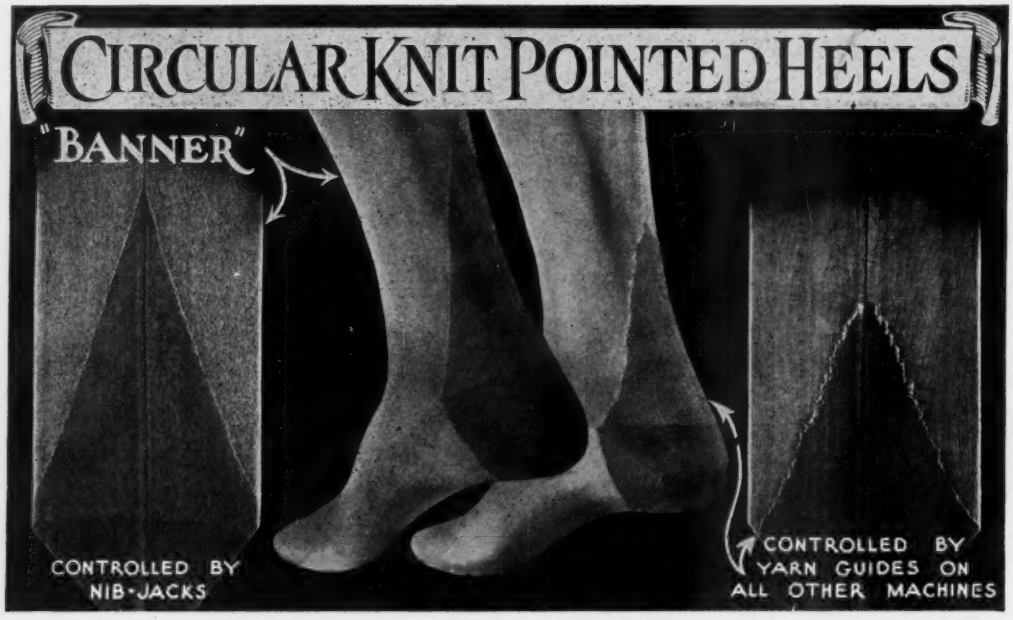
The formula clerk must make out separate tickets on the chemical and dyestuff room, where all additions for shading purposes can be noted and checked; then the dyer or the laboratory workers can check the formula again in an experimental way. This card is shown in Fig. 7.

Weighing Up Dyestuffs, Etc.

The operative weighing up the dyestuffs and the necessary materials must be either a capable laboratory or machine man who has a fair working knowledge of the various dyeing, bleaching and preliminary processes. It is much more economical to have a first-class man on the scales and balances as he can act as a check against possible human errors in the calculations and nomenclature used on the formula slips. The best and most desirable scales are always the cheapest and the proper instruction of the operator to be careful in adjusting, cleaning and not leaving the weights on the balances, as that tends to wear the agate bearings and make correct adjustment an impossibility. A large size scale can be used for weighing up oils, chemicals, blacks, cordovans, etc., while the smaller balances and grain scales can be used on the formulae for lighter shades.

The operator weighing up can supervise the preparation of the dyestuffs, bleaching liquor, etc., following standard methods, and after thorough instruction of a key-man by the dyer, they will not vary, and the man will notice any possible troubles in preparation.

A great many hosiery mills have separate Monel metal



Are you absolutely assured of perfectly tapered reinforced pointed Heels, with your present equipment?

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A glance at the above illustration will show you the marked contrast between the Pointed Heels made on "BANNER" Nib-Jack machines and those of all other makes using other methods.

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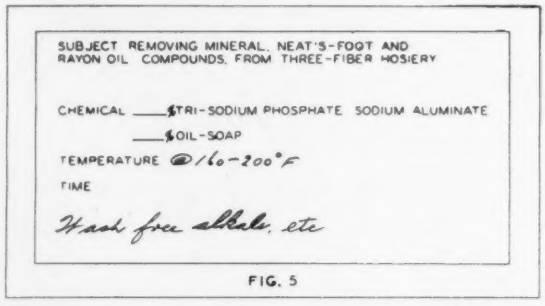
buckets and kettles, for the boiling up of dyestuffs and preparation of bleaching liquor. A simple method is to have a slightly raised platform where the buckets, kegs, and barrels containing the weighed-up dyestuffs, chemicals, etc., may be placed under projecting steam pipes, and the liquor boiled a uniform period of time, usually the solution is best gained at 200 degrees instead of 212 degrees F. as there will be a loss from hard boiling and splashing.

It is advisable on sulphur black dyestuff to boil up the sulphide, soda ash (or caustic if used) previous to the


SUBJECT REMOVING MINERAL, NEAT'S-FOOT AND RAYON OIL COMPOUNDS, FROM THREE-FIBER HOSIERY

CHEMICAL ____$TRI-SODIUM PHOSPHATE SODIUM ALUMINATE

____$OIL-SOAP

TEMPERATURE @160-200°F

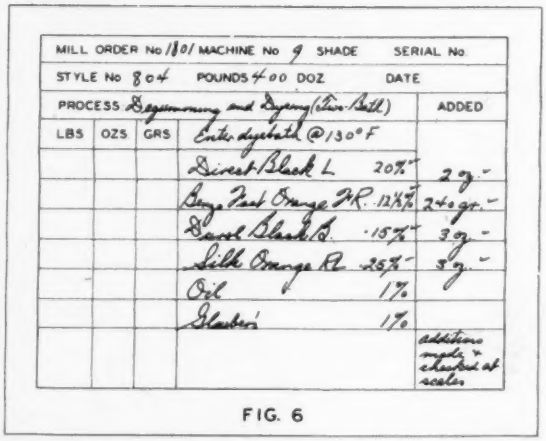
TIME

Wash free alkali, etc

FIG. 5

entering of the dyestuff. There has been quite a controversy as to the technical selling points of various types of sulphur blacks as their superiority is based largely on solubility, exhaustion, and the *n*th degree of coloring power when used in the standing bath. The operator after being shown the correct temperature and method used for preparing the storage or standing bath, can then be shown that by adding the dyestuff to the boiled-up sulphide and alkali solution, that the dyestuff will quickly go into solution. The period of preparation and boiling is shortened and the chances of making the sulphur black dye liquor too soluble are lessened.

Maintenance of the correct degree of Twaddle (3½ to


MILL ORDER No 181 MACHINE No 9 SHADE SERIAL No

STYLE No 804 POUNDS 400 DOZ DATE

PROCESS Degumming and Dyeing (Two Bath)

LBS	OZS	GRS		ADDED
			Enter dyebath @130°F	
			Direct Black L 20%	2 oz.
			Brown Fast Orange RR 12½%	24 gr.
			Direct Black B 15%	3 oz.
			Silk Orange R 25%	5 oz.
			Oil 1%	
			Glauber's 1%	
				additions made & checked at scales

FIG. 6

5 per cent is usually considered suitable) on a standing bath will enable a mill to secure full money value and prolong the life of the standing bath.

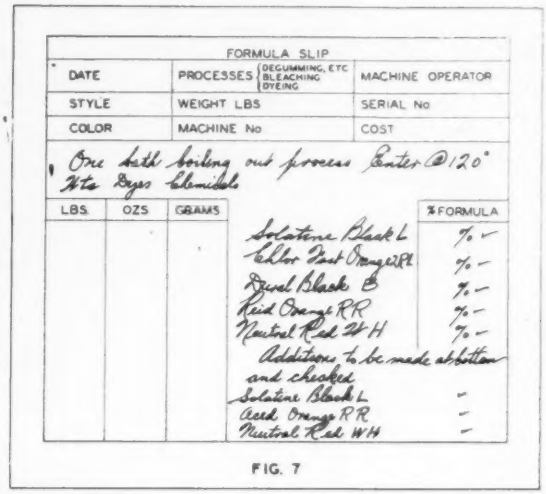
In preparing the degumming bath for Japan silk and boiling off or scouring bath for rayon, three-fiber, cotton and mercerized cotton hosiery, the alkalies used must be well dissolved before adding to the process involved. Then the oils, soaps and degumming oils may be added through a straining cloth, similar to the alkalies. Proper operation will produce thoroughly degummed silk or well-scoured rayon, cotton, etc., while by disregarding the standard method, there will remain oil spots and sericin streaks in the rayon and silk. The rinsing or washing off after these processes is best done by warm water and then hot washes. The final flushing over of the machine aids in ridding the hosiery of clinging oil, dirt, etc., which is usually floating on the bath, and, given a final hot wash, the hosiery is ready to be hydro-extracted and then dyed.

This precaution is for the two-bath method of dyeing, but can be applied to the one-bath method with the same results.

Standard Methods and Uniformity Essential.

Standard methods and equipment must be used, and the importance of uniformity in all work impressed upon the workers, and immediate notice posted of all changes made in various processing operations. The key-man must be notified and the method of change outlined so that the operatives may be readily called to account for errors made that have occurred through their negligence in not reading the notice and following it out.

In the weighing up room the scales and balances should be arranged so as to be free from drafts, open doors and


FORMULA SLIP

DATE	PROCESSES (DEGUMMING, ETC BLEACHING DYEING)	MACHINE OPERATOR
STYLE	WEIGHT LBS	SERIAL No
COLOR	MACHINE No	COST

One bath boiling out process Enter @120° Wts Dyes Chemicals

LBS	OZS	GRAMS		%FORMULA
			Solatone Black L	% —
			Color Fast Orange 2RL	% —
			Direct Black B	% —
			Acid Orange RR	% —
			Neutral Red 2B H	% —
			Additions to be made at bottom and checked	
			Solatone Black L	—
			Acid Orange RR	—
			Neutral Red WH	—

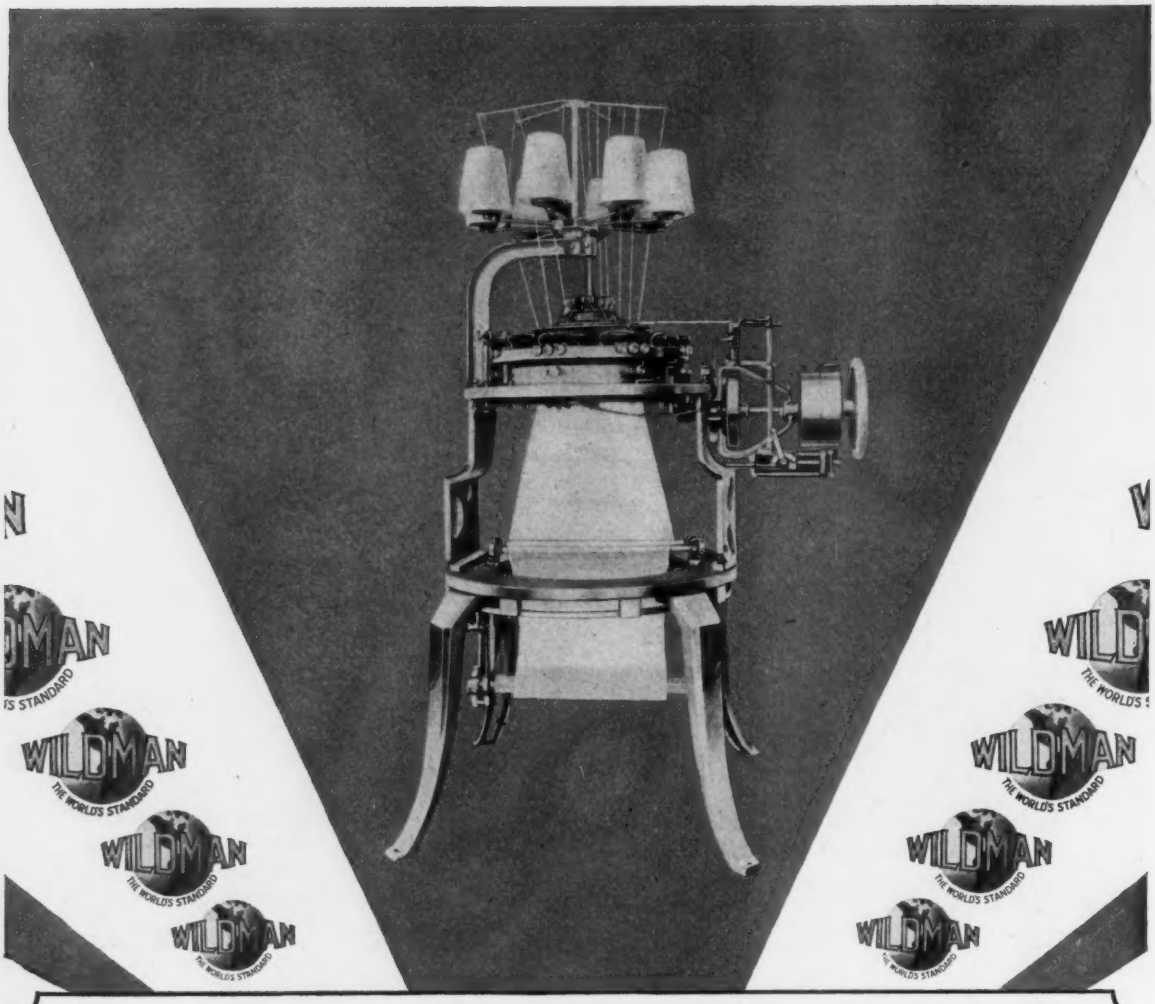
FIG. 7

windows. They can be placed in corners; as for the smaller balances, it is best that they be placed on a solid base and have a cover. The case can be wood or glass, all depending upon the care taken by the operatives. By using a solid and level support, the balance will be free from the jarring of the usual "wobbly" table found in many dyehouses, while there is always an up-to-the-minute equipment in the yarn weighing and testing room of most modern mills.

(In the third article, to appear in a forthcoming issue, Mr. Ordway will continue the discussion of his outline, published in the August number, taking up the dyeing, bleaching, hydro-extracting, and semi-drying processes.—The Editor.)

A New National Sulphur Green.

National Aniline & Chemical Co., Inc., 40 Rector St. New York City, have announced the addition of National Sulfur Green 3G Conc, to their line of sulphur dyes. This product, it is stated, is recommended for use both as a self shade and in combination with other National sulphur dyes for a wide range of greens. It possesses good all-around fastness, and yields bright and yellow shades off green, it is stated.



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WILDMAN
SPRING NEEDLE BODY MACHINE

Standard Costs and Budgeting Control for Full-Fashioned Hosiery

By Byron P. Harris—C.P.A., With Arthur F. Morton & Co., Inc.

TO THE average manufacturer the idea of standards or budgets is quite often surrounded with mystery and doubt. He is frequently uncertain as to just what standards are and how they can be used and is skeptical as to the practicability of budgets. Knowing his business as a practical man, he usually feels that no one can tell him anything that is occurring in it of which he is not fully aware. He feels that no standards as he sees them can be set by anyone not thoroughly practical and that no budgets can ever be followed and are therefore without value. It is difficult for him to visualize anything at all useful, much less scientific, about any figures that are compiled for him by those whom he considers to be novices.

If he will thoroughly analyze his situation, however, he will realize that his contact is essentially with his business alone and that his perspective is somewhat limited thereby. Those others who are in touch with the entire industry of which his business is just a part, will probably be in a position to render him a service which his own experience could not cover. Furthermore, he will realize that he is daily making allowances for things which are taking place in his mill, which he knows to be irregular, but which he passes by merely because he feels that so long as he is aware of them they can do no great damage. It is this last fact as much as any other which should open his mind to the value and practicability of standards.

SUMMARY		
	PROFIT	LOSS
SALES		
MATERIAL		
PRODUCTION		
BUDGETED EXPENSES		
COMMISSIONS		
DISCOUNTS		
INTEREST		
EXTRAORINARY ITEMS		
TOTALS		
NET PROFITS		

This form provides a condensed summary of profits or losses from all sources, in monetary values. Supported by exhibits setting forth the details of each item, it furnishes the means by which a ready and intelligent investigation can be instigated into any function which may not appear to be entirely in order.

When properly viewed, standards are most practical. They are based upon normal conditions as determined by careful studies and analyses, and provide the most dependable means of measuring constantly the efficiency and economy of operations. For the reason that every business has its own individual characteristics, differing in some greater or lesser degree from its competitors or contemporaries, the very elasticity of the standards so determined, makes them the most logical and the most accurate measures that could be provided. The manner in which they are determined is in itself so simple and yet so thorough, that their accuracy and dependability are perfectly apparent to the practical man when they are properly set before him.

The manufacture of full-fashioned hosiery lends itself most readily to the establishment of cost and production standards. The process of manufacturing, from the first handling of the raw material down to the final handling of the finished product, is clearly defined. The application of costs to the productive processes and the control of the flow of production through them can be effected in a concise manner, without disturbing the equilibrium of the mill personnel nor the routine of the administrative functions.

The cost of manufacturing any product is composed of certain recognized factors which may be stated as follows:

Raw Material
Direct Labor
Burden and Overhead

These factors will not differ in any type of business, although their values and relations to each other will vary in different industries, and in different plants in the same industry. It is upon the recognition and proper handling of these characteristic variations that the success of a costing method will depend. The standards will be worked out upon each of these factors, after a thorough study and analysis of operating conditions has been made.

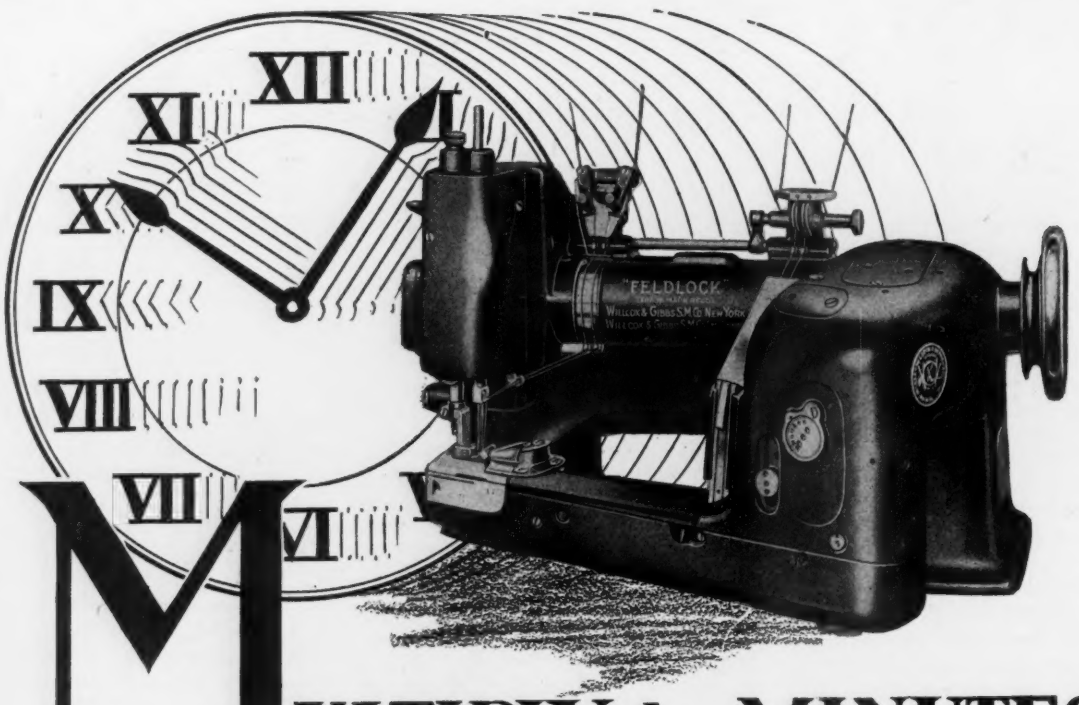
Most manufacturers of full-fashioned hosiery inadvertently set cost standards for themselves when they figure in advance of a season the price on which they will base their silk costs; also when they figure how much silk and cotton they use in a stocking; when they figure what their overhead is; and when they figure how many dozens they should get each day from their leggers, footers, etc. In the majority of instances, however, these figures are set with some uncertainty and no effort is made to prove them. To be of real value, costs must be established with reasonable assurance of accuracy and must be subjected to proof at regular intervals.

Material.

In computing the material costs for full-fashioned hosiery, two things must be borne in mind. First, that the silk is to be purchased against a set price, and second, that a given amount of each of the component materials is to be contained in each dozen of a particular style.

The manufacturer should know at all times just how close he is buying to the price he has fixed. If he is doing better than he had figured, he is saving the difference. If he is paying more than he figured, either he is not buying right or his fixed price was not high enough and he must effect a change.

The amount of yarn being consumed should conform



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with the amount which the production would warrant, based upon the weights of materials determined for each style of stocking being manufactured. If the actual weight being consumed was in excess of the amount which the production would warrant, then the silk should be investigated. Heavy silk or silk containing excessive gum would not give the yardage or dozens which it should. Specific test runs on the silk being used will prove whether or not this condition obtains. Abnormal waste or the actual disappearance of silk might be other causes of excessive consumption. The former condition can be accounted for in the waste produced, if this is watched. The latter condition presents difficulties; and the individual case must govern the method of approach. Since the cost of the silk constitutes the major portion of the cost of the hosiery, both the price and the consumption are items of vital importance and should be closely checked.

Direct Labor.

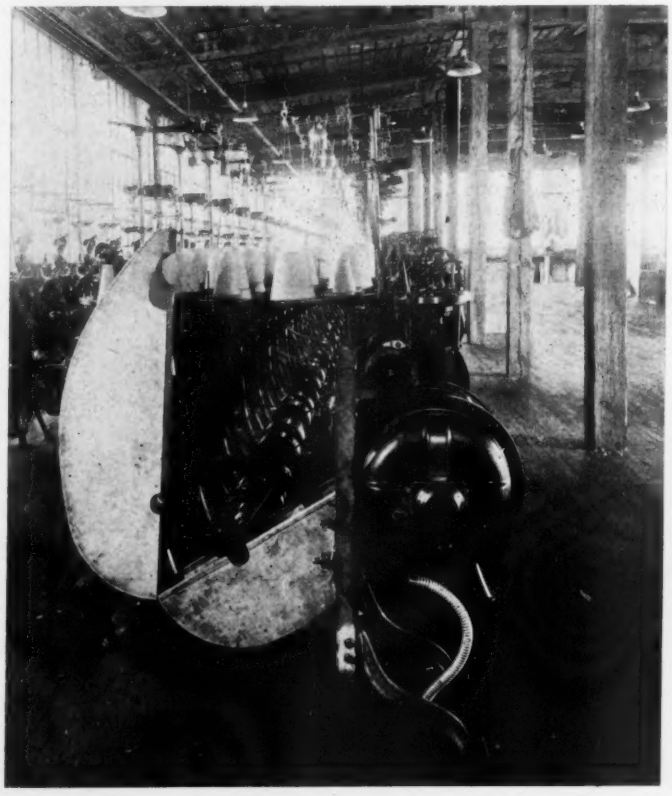
Some hosiery mills make a practice of doing part operations for other mills, either by doing some of the beginning or some of the finishing processes. Some mills purchase partly finished hosiery and complete it themselves. Because of these conditions, as well as for other reasons, it is necessary to know the cost on each process through which the hosiery is taken. Since most of the labor is done on a piece work basis, it is a simple matter to learn the labor cost per dozen for each operation, from the payroll. At the same time the distinction between the processes can be made so that not only the labor costs, but all other costs can be applied to them as well. On such operations as are performed by time workers, the labor cost, as well as the other costs, will be based upon the normal production passing through. The direct labor includes only that which is performed directly upon the product, general factory labor being included in the burden which is distributed among all of the processes.

Burden and Overhead.

The burden of the product comprises such items as are closely related to the cost of maintaining each of the productive processes or departments. These items of cost must be considered from two angles, namely, as to their amount, and their distribution among the productive departments.

The matter of establishing the amounts of the items to be included in the burden involves careful study and analysis of conditions. Since costs are to be based upon the normal production, the amounts to be budgeted for these items of expense must be regulated accordingly. In most cases prior experience will indicate with reasonable accuracy what the expenditures should be under normal conditions. Where radical changes are being made or where a new mill is being started, the normal expenditures must be computed according to the estimated normal capacity of the plant.

The distribution of these expenses over the various departments must be made in such a manner as to assure equitable charges to each. In view of the fact that they are closely related to the cost of maintaining the departments, the basis for the distribution of each will be deter-



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A SILENT CHAIN DRIVE ON KNITTING MACHINES.

WHILE simple in comparison with some drives recognized as being difficult engineering problems, the drive for a line of circular knitting machines offers opportunities for efficiency and economy.

The accompanying illustration shows an application of silent chain drives, this having been taken in a prominent North Carolina knitting mill. It will be noted that the motor, through the chain drive, operates the central shaft which drives two lines of machines.

The chain shown is a Morse chain drive, with a G-E motor. It will be seen that the motors are mounted on Morse brackets.

<>

mined in accordance with the nature of this relation. Some will be allocated on the basis of the floor space occupied by the departments, some upon the value of the machinery in the departments, some upon the horsepower, etc. Each department, in this manner will receive an equitable portion of these expenditures, to be included in the total cost of operating that department.

The items of overhead expense are those which represent the costs of administration. The amounts to be budgeted and the method of distribution over the departments will depend entirely upon the circumstances surrounding the particular case, different mills having different conditions under which to operate.

The application of the Burden and Overhead as budgeted and distributed to the productive departments is made on the basis of the normal production of the mill. The cost of material and labor in each dozen is readily obtained as heretofore outlined; the portion of the Burden and Overhead to be carried by each dozen will be computed by applying the amount as distributed to each department against the production as predetermined. The costs per dozen are thus standardized for each of the three component factors.

The standardization of production is the result of analysis and study. Prior experience furnishes a guide to future performance, but this is not always sufficient. Frequently mills operate under conditions which are far from the best and the efficiency is low in proportion. In such cases the production experience must be discounted and the normal predetermined under the conditions as corrected.

After the production is standardized on a normal basis, provision must be made to assure its maintenance at that figure. Records of production must be inaugurated which will show the production flowing through the mill at all points and at all times; these records will serve to prevent stagnation of materials in process and permit of the intelligent regulation of the production. The executive is thus provided with a report each day showing the styles and sizes ahead of each department and in both gray and finished goods inventories; thus he knows on which numbers he is either long or short. These records must be accurate, but also simple and easy to handle. The proper regulation of production and the control of the inventories is one of the most important of executive functions, since a rapid turnover is a vital necessity to the economical operation of the business.

With all standards established, the problem remains of showing in dollars and cents the cost of failure to meet them, or the profit realized by exceeding them. It is most logical to assert that usual market fluctuations in materials, or variations in expenditures from period to period, should not be reflected in the costs. Selling prices do not fluctuate so and therefore the stabilization of costs is fully justified. Hence, if each of the factors of cost is proved out by comparing the actual expenditures and performance with the standards, the differences will be reflected as losses or gains resulting from these fluctuations.

The actual cost of silk consumed as compared with the standard cost set in advance, will show the profit or loss realized as a result of the purchasing policy. The cost of the actual material consumed as compared with the cost of the material which should have been consumed according to the standard weight of the actual production, will show the profit or loss realized as a result of actual usage of the silk.

The actual expenditures for items of Burden and Overhead expense, as compared with the amounts budgeted, will show the profit or loss realized as a result of the excess over or the recess from the amounts budgeted to be absorbed in the costs.

The standard costs of the actual dozens produced as compared with the standard costs of the dozens which should have been produced under normal conditions, will show the profit or loss as a result of abnormal or subnormal production. Any such fluctuations can be immediately investigated, the cause determined and the necessary adjustments made as quickly as possible.

The margin between the selling price and the cost, at standard, of all sales will represent the profit realized from the actual sales of the hosiery. This permits of the intelligent regulation of the sales effort, emphasis being laid upon the sale of the more profitable lines, others being carried only insofar as necessary.

With profits or losses summarized from all of these sources, the executive is confronted with the net results of operations and is in position to know the strong and the weak points in his business. By expending his greatest efforts in building up the latter, he is enabled to economize his own time to the best interests of his business. He is in close touch at all times with all phases of his business and knows how well each part of his organization is functioning.

Two English Reference Books.

Each year two of the leading textile magazines in England issue comprehensive editions of their year books, both containing much information of value as to mill practice, as well as statistics and other data relating to all phases of the industry. The 1928 editions have just been announced.

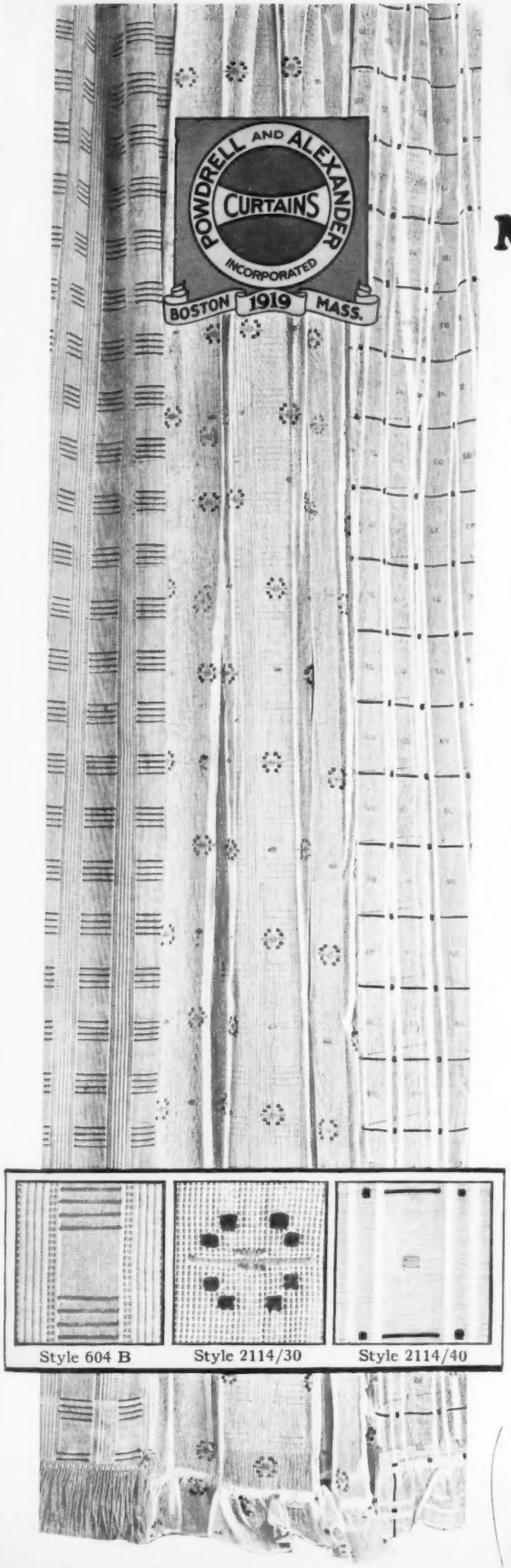
One, "The Textile Manufacturer Year Book", published by Emmott & Co., Ltd., 65 King Street, Manchester, England, is in the usual form, with a number of new features incorporated for the first time.

"The Textile Recorder Year Book" appears in a much enlarged size this year, containing over one thousand pages in which is found valuable reference material relating to textiles. It is published by "The Textile Recorder", 121, Deansgate, Manchester, England.

Copies of either book may be secured through COTTON'S Book Department.

"The Manufacture of Artificial Silk."

A new book covering the manufacture of rayon has been published by D. Van Nostrand Co., 8 Warren St., New York City, being one of a few books current dealing with the subject in a practical and technical manner. It is written under the above title, by E. Wheeler, an English chemist. It covers the Viscose, cuprammonium, nitrocellulose, and cellulose-acetate processes of manufacture, with particular reference to the Viscose method. A historical outline of rayon or artificial silk, and a discussion of the chemistry of the four processes named, is contained in the first two chapters; the remainder of the book being devoted to a detailed discussion of the different processes. The properties of rayon, its uses, laboratory methods, identification tests, etc., are also covered. The price of the book is $5.00 per copy; and copies may be secured either direct from the publishers or through COTTON'S book department.



Style 604 B | Style 2114/30 | Style 2114/40

color, the MASTER SALESMAN

PACO CURTAINS, manufactured by Powdrell & Alexander, Inc., of Boston, Mass., are acknowledged to be one of the fastest selling lines in the country. What makes them sell? Color! Rich, vivid, and daring hues and subdued, dainty shadings, in clipped and dotted effects, on neutral grounds, give Paco Curtains the eye-impelling attractiveness that spells sales.

This attractiveness is lasting, too, for all colored yarns used in these curtains are dyed with Fast-to-Bleaching shades (vat colors) by the Franklin Process. These colors are the fastest known, to washing, light, and all color-destroying agents.

The outstanding success of Paco Curtains is typical of the experience of many manufacturers using Franklin Process Colored Yarns.

We have prepared a portfolio showing full-color reproductions of some of these fabrics, which every creator and manufacturer of yarn-dyed fabrics will find interesting. Shall we send you a copy? Just say you want it.

FRANKLIN PROCESS COMPANY

Largest Job Dyers of Yarn in America
also Yarn Spinners, Manufacturers Glazed Yarns, Dyeing Machines

A FRANKLIN PACKAGE OF DYED YARN

It will deliver freely, either by rotation or over end, substantially lowering winding costs.

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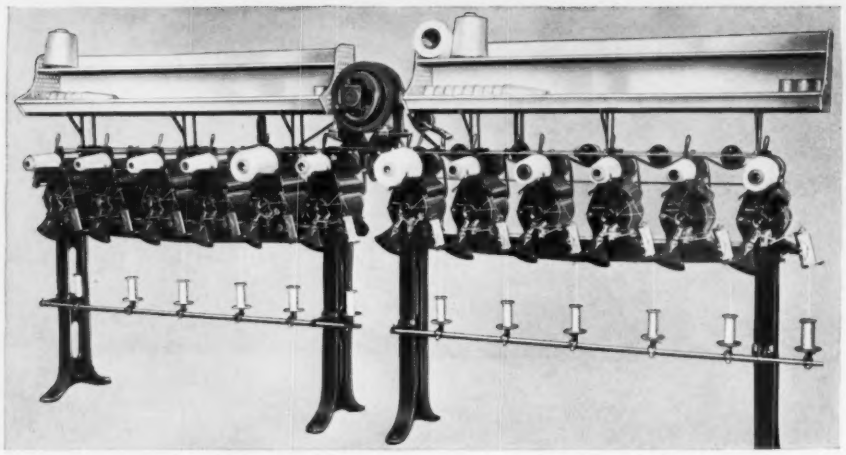
Commission Dyeing of Yarn in the Wound Form

Ad No. 230-A. Printed in U. S. A.

JUMBO CONES



WINDING FIBRE SILK FOR KNITTING

No good manufacturer of knit goods would even contemplate knitting from a small supply like a cop or bobbin, for two fundamental reasons: first, the supply would be too small, and second (and more important), in drawing off from knitting supplies of small diameters, the material must unwind rapidly, due to the fact that one wrap represents but a very short length of yarn.

The ideal knitting package of fibre silk is a cone of 5¾″ traverse, built on a large diameter cone tube, as represented by the "Universal Jumbo" cone wound on the "Universal" No. 50 machine.

The empty cone tube has an average diameter of 2⅞″, and the outside diameter of a three-pound cone when wound is 5⅝″. The three-pound cone represents the maximum recommended for fibre silk, and naturally cones of smaller diameter and less weight may be wound, if desirable.

Starting with this large-diameter cone, the wall of fibre silk on a package containing three pounds net is but 1⅜″. Glancing at the illustrations above of "Jumbo" cones, you will readily appreciate the assurance of even tension when knitting from a package with large circumference, and with none of the impediments to delivery common to bobbin types of winding.

The "Jumbo" cone, the latest product of the "Universal" No. 50 winder, is the result of exhaustive study and careful development by the Universal Winding Company, collaborating with the manufacturers of fibre silk, and with the knitters of this material.

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UNIVERSAL WINDERS

Ad No. 22. Printed in U. S. A.

Rewarding Mill Workers for Suggestions

Knitting Mills and Other Plants Can Use the Suggestion Box Idea to Advantage; One Mill's Method and Results Described

By R. L. P. Reifsneider

In the "Knitting Kinks" section of the August issue of COTTON, appeared a question asking for different mills' experiences in using a "suggestion box" in knitting mills. The inquirer wanted a description of the results of such a practice, and information as to how the employees submitting suggestions are rewarded for adopted suggestions. The following discussion of the subject, by a COTTON correspondent, was prepared in response to this inquiry, and is presented for the interest of other readers considering this practice.—The Editor.

IN my ramblings among hosiery mills in Pennsylvania, curiosity over the whys and wherefores of practices that are not common among manufacturers prompts me to ask numbers of questions that have no bearing on the prime object of my visits. Happening into the office of an executive of a company of some importance where a committee was going over what I learned subsequently were suggestions from employees, I tried to find out what it was all about; what good was expected to come out of spending a lot of time over hints from subordinates for improvement in the conduct of the mill. Everybody seemed secretive, disposed to shed no light on the subject.

This gave me an appetite for acquiring all the knowledge I could pick up in a casual way concerning the operation of suggestion boxes, and any advantage to be derived from their use. Eventually, it was my good fortune to establish a contact with the manager of a large representative full-fashioned mill. And this is the way, he explained, suggestions from employees are received and treated:

In theory, there is one suggestion box for each department. In this particular mill there is one for each of the four floors, one devoted to knitting only, the others being occupied jointly by several departments. But this is aside from the method of filing and receiving suggestions, as every person offering one signs his or her name to what he or she has to say and names the department where employed.

Suggestions Discussed Once a Month.

Each month the four boxes from the several floors are delivered, all sealed, to a committee representing management and operatives, and the contents emptied upon a table, one box being disposed of before another is opened. As might be supposed, many of the suggestions are tinged with selfishness, and offer nothing of a helpful nature. But out of the chaff is sifted some real wheat. There usually is more of the initiative in what comes from the knitting room than from any other department, attributable to the fact that is where the older and more experienced persons are employed.

Every suggestion that carries a thought for betterment for general good is put into a separate pile, the others, representing a large majority, being placed in an envelope for reference in the event a dispute over the fairness of the judges arises. The few that are laid aside for further study are gone over carefully, until a majority of the judges decide by vote as to whom the prizes shall be awarded.

Prizes Based on Merit of Suggestions.

There are four prizes, the first of twenty dollars, the others are ten dollars, five dollars, and $2.50 respectively. They are awarded strictly on merit, and one person may be a prize winner in succeeding months. There is much elation among the winners, and it often happens that the unsuccessful feel they were not fairly treated. So, almost invariably there is some friction following the awards, but also invariably it disappears before the next opening of the boxes. Obviously, no employee who offers a suggestion is eligible to a place on the board of judges.

Do a majority of the employees use the suggestion box? They do not, those in the knitting room in particular being divided in opinion as to its feasibility. There are good knitters who are unwilling to take a chance on going over the head of the foreman, particularly if he be of a jealous disposition. If he is one of those who can see good in a suggestion from a subordinate, instead of reserving to himself the sole privilege of going to the front, there is a more general participation in the monthly formality. Generally speaking, it is easier to curry favor with the mill ownership through voluntary suggestion than with the immediate superior, and if the management could say so without incurring the displeasure of the department foreman, it probably would declare in favor of the suggestion box. So, in order to get maximum results from its use, it is important that there be a thorough understanding between executives and department heads. In most mills where it has become a permanent fixture, there is such an understanding—that its purpose is to establish and maintain friendly relations between owners and operatives.

System Induces Cooperative Spirit.

When there is exercised perfect freedom in submitting suggestions, the practice is much liked by the employees, and once it is installed it should not be discontinued except on a large majority opinion of the latter. This is stated by the management of several mills, and this doubtless explains

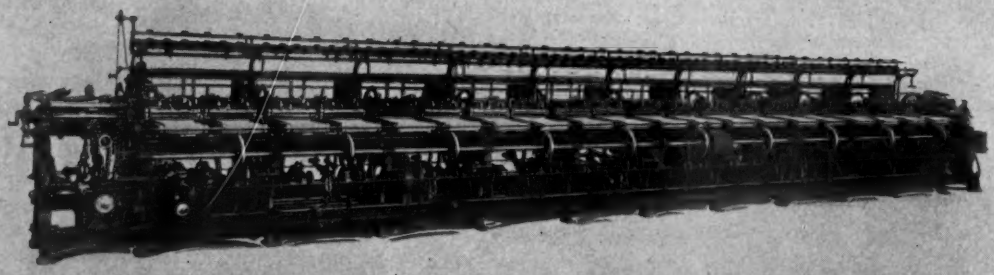
FOLLOWING this discussion of using suggestion boxes in knitting mills, we hope, in an early issue, to present another article describing the successful experience of a manufacturing plant, in an entirely different field, in the operation of this system. While not applicable to knitting mills "in toto", this plan will present some interesting observations upon this plant's experience, and will contain some helpful suggestions for any mill contemplating the installation of such a practice at their plant.

FACTS

A new mill started operation with our 24 section Reading machines more than a year ago. These machines are operated in two shifts .... practically 24 hours per day. Production, ranging from fourteen to sixteen dozen per machine, per shift, has been uninterrupted.

RESULTS:
Low costs per unit
High profits per unit

TEXTILE MACHINE WORKS
READING, PA.



READING
FULL-FASHIONED KNITTING MACHINES

why it has not been installed in many more, especially those in which are employed members of the knitters' union and non-members, on the open shop plan, as, it is found, many of the suggestions have to do with means for increasing an employee's earnings. These, however, in the mill in which the system was freely explained to me, receive the same attention as those of any other nature, as they may convey a hint of something mutually advantageous. Some give original ideas on merchandising which may or may not be valuable, yet still serve the purpose of showing an operatives interest in the welfare of the mill. Some point the way to experiments in construction of stockings for putting them on a plane with an innovation from a rival manufacturer.

In summing up, it is found there is nothing for either side to lose by receiving suggestions from the other, while there is the possibility of much being gained. But most important of all, perhaps, is the proposal that the suggestion box may be a most effective link in relationship between mill and management.

Knitted Holiday Novelties Being Made.

HOLIDAY novelties are the talk of the knit goods industry, and several manufacturers are planning sensational articles to attract new business. Bedspreads, scarfs, neckties, lamp shades, underwear of all descriptions, and many other things are being featured at the present time and in all "colors of the rainbow". Even union suits for men are taking on the demand for color, to appeal to feminine buyers for the holiday season, and are being boxed with this in mind.

Bedspreads are also being made in attractive colors for this purpose and to look much the same as the woven ones to be sold at various prices. They are made in cotton, rayon and silk, and combinations of the two or three. The rayon appears to be making quite a sensation and buyers are taking sufficient for displays of this type of goods, planning to have their displays early, so that consumers can begin to get used to the new ideas and prepare to make their purchases early.

There appears to be a movement started in favor of scarfs of silk and rayon, some of which are in the lace designs, others plain with colored or printed borders. The fringed numbers are coming forward. The 54-inch shawl is one of the new numbers developed for the trade and made in a lace design with large floral sprays hand colored. The effect is very striking and appears to be well liked. Some colored borders, striped or in floral designs are also being included in the new numbers.

There is to be tried out a special advertising feature of fancy cotton hosiery for Winter and the cotton and worsted numbers are to be featured in sports colors and patterns, although one producer of hosiery said he believed that dark colors and plain stockings would be very popular for this season. The embroidered and printed clox are featured in evening shades and matching dress colors for the street. Navy blue is coming forward.

Children's novelties for Spring make a good start in the new numbers and the 1929 line of golf hose are attracting favorable comment in fancies.

Many of the new lines show the straight top and striped in circular effect and there is an increased number of fancies being shown in the socks for very small children. It is believed that fancies of this sort will find a more active market than some of the plain numbers featured this year. The combination of silk and cotton and rayon and cotton is noticeable in the new lines. Jacquards are numerous in numbers for the larger children, particularly those for boys.

It is said that prices are firmer than they have been in years and the market is said to be in better condition and ready to meet the business on its way than it has been for some time. Carryover stocks are not general and a good healthy condition prevails.

Among the Knitting Mills

IT is reported that a new knitting mill will be constructed in Selma, Ala.

Work has begun on the new dye room and finishing plant for the Chester Knitting Mills, Rome, Ga.

Through the Charlotte Offices of Lockwood, Greene & Co., Inc., Engineers, contract for complete installation of steam heating and boiler piping at the Westcott Hosiery Mills, Dalton, Ga., has been let to Grinnell Company.

The Sumter Rayon Mills, Americus, Ga., have let a contract to Kent & Ansley, Americus, Ga., for the construction of a new rayon knitting plant. This plant will make rayon bolt goods to be utilized in the making of hosiery and underwear.

The interests that operate the Griffin Hosiery Mills, Griffin, Ga., plan to erect a full-fashioned hosiery mill in Griffin, Ga., with a capacity of 700 dozen pair of hose a week. The mill will be open for operation on Oct. 1.

The National Silk Hosiery Mills, Inc., Indianapolis, Ind., is the name of a new hosiery mill that has been established for the manufacture of full-fashioned hosiery.

Through the Charlotte office of Lockwood, Greene & Company, Inc., Engineers, contract for an electric freight elevator has been let to the Otis Elevator Company of Charlotte, N. C., for the Hudson Silk Hosiery Company of Charlotte, N. C.

Brick-laying has begun on the new $1,000,000 full-fashioned hosiery mill addition of the May Hosiery Mills, Inc., Burlington, N. C. Additions to the building will be made as rapidly as the machinery can be installed and labor trained until the total number of machines in operation will be between 75 and 100, it is said.

A charter has been granted to the Triangle Hosiery Company, High Point, N. C., to manufacture and deal in hosiery and underwear.

Contract for the construction of new mill and dye-house for Hudson Silk Hosiery Company, Charlotte, N. C., has been let to T. C. Thompson & Brothers, Charlotte, N. C. Lockwood, Greene & Co., are the engineers.

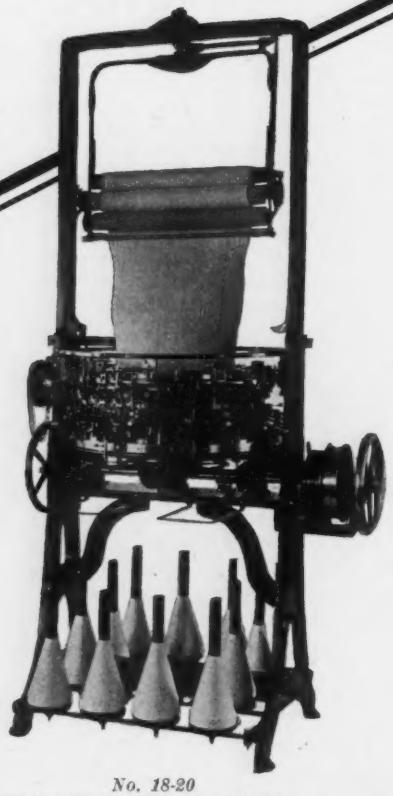
Organization of a full-fashioned hosiery mill to be known as Alton Park Hosiery Mills, Chattanooga, Tenn., has been announced. Application has been made for a charter and contract for the erection of a one-story building, 60 x 120 feet, has been awarded to Rogers & Leventhal, Chattanooga, Tenn.

Morton-Davis Co., Dallas, Texas, has asked bids on general contract for a one-story hosiery mill 105 x 156 feet with extension 45 x 46 feet to cost about $60,000, with equipment. W. Scott Dunne, Dallas, Tex., is the architect.

The Liberty Hosiery Mills, Liberty, Texas, have been incorporated.

Merited Confidence

The New 18-20



No. 18-20
Spring Needle Rib Top Machine with Stop Motion.

In a New Fabric
COOPER SPRING NEEDLE RIB MACHINE

Making

Rayon, Silk, Fine Cotton, or Worsted Fabrics for Underwear, Sweater Coats, Swimming Suits, etc.

Send for Samples of this New Fabric.

Oldest Makers of Spring Needles in the U. S.

With a solid rock foundation — laid in 1842 as the first manufacturers of spring needles — Cooper has risen steadily with the industry.

Today Cooper Latch Needles are now being produced from special High Speed wire which takes a more uniform temper.

They are now equipped with the improved Non-Turnable Rivets.

They are used by the leading mills of the textile industry.

Cooper Spring Needles
Cooper High Speed Steel
Non-Turnable Rivet Latch Needles

Established in 1842

Charles Cooper Co.

Machine and Needle Works

Bennington, Vermont

G. H. ROGERS, Traveling Representative, 677 Warren St., Albany, N. Y.

C. C. KELLEY, Sales Manager, 121 East 24th St., New York City.

G. W. MORTON, Southern Representative, 1002 Magnolia St., Greensboro, N. C.

Agents: MELLOR, BROMLEY & CO., Ltd., LEICESTER, ENGLAND.

ELBROOK, INC., 50 Peking Road, Shanghai, China, Agents for China and Japan.

M. BUCHSBAUM, Calle A'sina 1814, Buenos Aires, Argentina.

The Yarn Market

Philadelphia, Pa., Aug. 15th,[1928

THE PHILADELPHIA cotton yarn market, as a whole, continued dull for the month preceding this writing. The market has been one for the buyers as the decline in the price of cotton has forced the spinners to lower their prices accordingly. During the latter part of the month there was a tendency on the part of both buyers and spinners to hold off until after the Government crop estimate was released. Upon the release of the Government report the fluctuations of the cotton market were such that very little trading was done due to waiting for the market to settle. The principal consideration at present is that the yarn business has now left the worst part of the year behind it; that the normally most active season for the manufacture and sale of cotton yarns is closely approaching, and that made-up stocks of surplus yarns will not, on this occasion, prove an obstacle to prompt response of yarn quotations to the impending revival of yarn demand.

The first week of the month preceding this writing opened with the lower trend of cotton causing a persistent shading of yarn rates. Compared with the price of ordinary carded yarns of the previous week, Saturday's final rates for carded yarns were down about half a cent a pound. The yarn stocks are well in hand as the mills have been curtailing their production, although on occasion there have been more stock yarns on hand than could be readily disposed of. With the market entering the last full business week of July, the outlook was believed by the yarn factors to be much more encouraging than it was a week back, and even more assuring than it was at this time last year.

The next week brought July to a close and yarn sellers agree that very little real progress was made, as compared with June, in the matter of increasing sales volume of either carded or combed yarns. The decline of over two cents a pound of cotton during the month, it is explained, proved too great a handicap to be overcome by the distributors. A number of spinners supplying the market with ordinary carded yarns have acceded to the importunities of dealers and have shaded their asking prices. This did not bring an increased sales volume for those concerned, but did have the effect of undermining the quotations of other dealers and spinners.

The third week of the month found 20s-2 carded warps offered on the market at 35 cents without takers, signaling a very small demand. Mercerized yarns were in such a position that leading processers cut their prices 5 cents per pound. Spinners' curtailment during the last week, while not so extended as that of the early part of July, is believed will reflect some benefits later, both to the mills which curtailed and for the yarn markets. Some of the spinners have been taking a little business at low prices, so all of the underselling has not been done by local interests owning stock yarns.

The week just ending was one of the most eventful in recent years, but the net effect on yarn prices and business volume was not important. The wide swings of cotton, although spectacular, came at a time when the demand for yarns was quiet. A month later, undoubtedly, such a condition in the cotton market would have seriously affected yarn trading. As matters stand, prices are very much confused, but at the same time show relatively less weakness than in the latter part of July. With cotton values very erratic and with no very definite explanation available as to the wide price changes in cotton, both spinners and buyers are following the policy of "standing pat". Dealers holding small stocks of yarn have been at a loss to decide whether to unload quickly or to hold for an advance. That the United States report may have erred, it is pointed out, will not be demonstrated to anybody's satisfaction until the next crop report comes out nearly a month hence. There was some price shading being done, but this was only on a few scattered small lots.

Philadelphia quotations on Aug. 14th, follow:

Single Skeins.

4s to 8s	30½	10s	31
12s	31½	14s	32
16s	33	20s	34½
24s	36	26s	37
30s	38	40s	

Single Warps.

10s	32	12s	32½
14s	33	16s	33½
20s	35	26s	38
30s	39	40s	45½

Two-Ply Skeins.

8s	31	10s	31½
12s	32	14s	32½
16s	33	20s	34½
24s	36½	26s	37½
30s	38	40s	44½

Two-Ply Warps.

10s	32½	12s	33
14s	33½	16s	34
20s	35	24s	37
26s	38	30s	38½
40s	46½		

Frame Spun Carded Yarn on Cones—Cotton Hosiery Yarn.

8s	30½	10s	31
12s	31½	14s	32
16s	33	18s	33½
20s	34½	22s	35
24s	36	26s	37
30s	38½	40s	45
30s dbl. carded	39½	30s tying in	37

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	43	20s	46@47
24s	48@49	30s	49@50
40s	54@55	50s	58@60
60s	63@64	70s	73@75
80s	83@86		

Single Combed Peeler Yarn on Cones.

18s	43	24s	46
30s	49	36s	51
38s	52	40s	53
50s	59	60s	64
70s	74	80s	84

Mule Spun Carded Yarn on Cones.

10s	36	12s	36½
14s	37	16s	37½
18s	38	20s	38½
24s	40	26s	41
30s	42	40s	50

Mule Spun Combed Peeler Yarn on Cones.

10s	43	12s	44
14s	45	16s	46
18s	47	20s	49
22s	50	26s	51
28s	52	30s	53
36s	56	38s	58
40s	59		

Carpet and Upholstery Yarn in Skeins.

8s and 9s 3-4 hard white warp twist	30½
8s and 9s tinged tubes	29
8s 3-4 hard twist waste	28

National Sulphur Bordeaux 2R Conc.

National Aniline & Chemical Co., Inc., 40 Rector St., New York City, announce an improved type of Sulphur Bordeaux, which is especially recommended by the company for producing cutch, mahogany, and other red-brown tones on cotton in all stages of manufacture.

SCHUBERT & SALZER

HIGH SPEED TYPE H-S-L

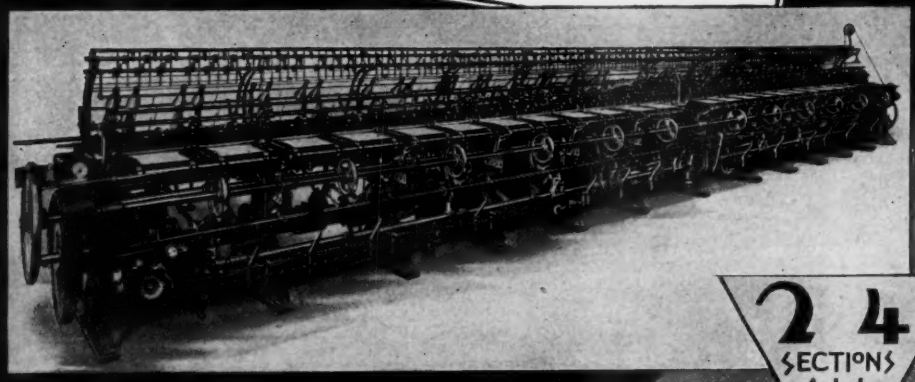
THE SERVICE PLANT OF ALFRED HOFMANN, INC. AT WEST NEW YORK and UNION CITY, NEW JERSEY

FULL FASHIONED HOSIERY MACHINES

YEAR in and year out the purchasers of Type H.S.L. (Theodor Lieberknecht) machines produce hosiery at higher speed—65 courses per minute.

This means thousands of dozens of pairs more production without increase in machine investment or overhead. Back of this machine is the largest knitting machine plant in the world and a competent service organization at West New York, N. J.

"ASK THE MAN WHO OPERATES ONE"



24 SECTIONS ALL GAUGES

ALFRED HOFMANN

INCORPORATED

WEST NEW YORK, N.J.

KNITTING KINKS

PRACTICAL DISCUSSIONS BY COTTON'S READERS ON VARIOUS KNITTING SUBJECTS

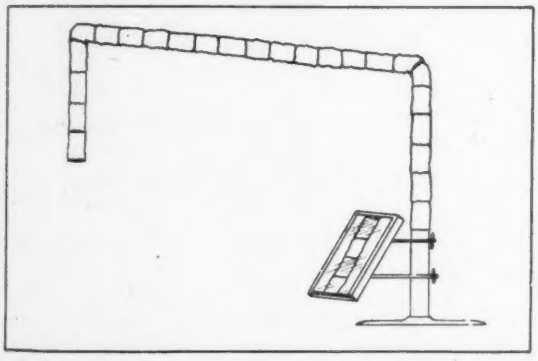
We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need no conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

A Handy Stand for Rib Tops.

EDITOR COTTON:

I will describe in this letter, for the readers of "Knitting Kinks", an idea we have developed for speeding up the operation of pulling the threads which separate the tops made on ribbers. As you know, the ribber operator walks from one machine to another, examining the strings of tops for waste or defects such as holes, streaks, rough or broken needles, etc.

The operator who does the top-separating gets the work from the ribbers. We have rigged up a stand as is shown in the accompanying sketch. We took a 7-foot length of 2½-inch pipe, making certain it was smooth by going over it with a file and emery cloth and then with a buffing

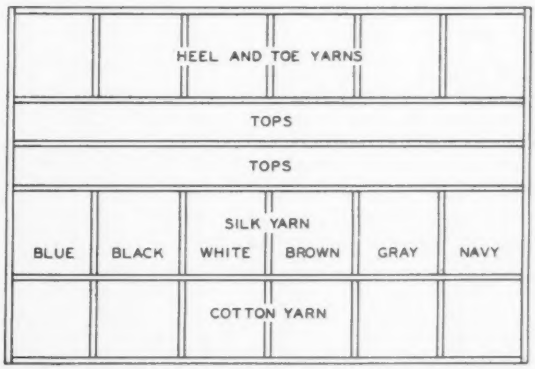


wheel. We cut threads on one end, and fastened this in a threaded hole in the center of a round metal disk base, 18 inches in diameter. This pipe extends vertically for three feet, and is then bent horizontally for four feet.

In the other end of the pipe we inserted a wooden plug, but find later that a metal plug is more desirable. Fastened to the vertical portion of the pipe is a mirror, as indicated, which permits the inspector, seated in a chair, to inspect the tops as she pulls the threads without turning the tops around. The operator pushes the entire string of tops on the pipe, and separates them as she pulls them toward her. As she separates them, she counts the tops in one dozen bundles (24 tops to the dozen) and then they are tied up into five dozen bundles or 120 tops and placed in bins in the department until called for. Each bundle carries a ticket similar to the illustration, showing the color, gauge, style number, etc.

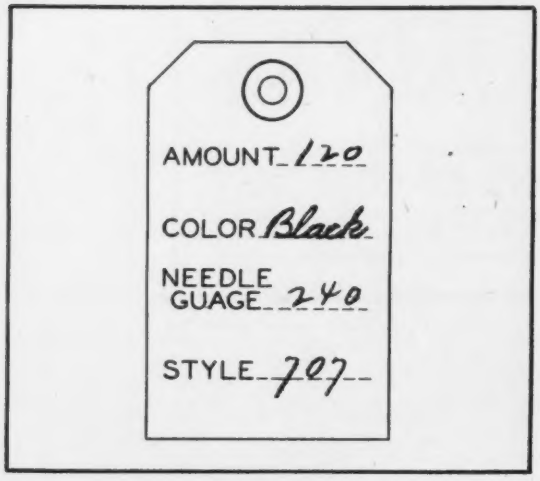
It will be remembered that when the ribbers first came out, the tops were made in one long string or piece and separated with a pair of scissors, later on by a machine called a top cutter. This resulted frequently in frayed edges, etc. Then came along a later ribber which puts a single thread between the welt and the loose course of each top, so that the top separator performs her form with a sharp pick or the point of scissors and pulls the thread and the top is neatly separated. With our new arrangement we find we secure some fast work and work that is very satisfactory.

While discussing this, and continuing a description of our method, I will outline the way we have our top room arranged, and our yarns are also kept in here. We put up



a cage 15 x 12 x 12 feet, and have it locked so that no one can get in except the girl in charge. On the front side is the wire caging through which the girl passes the yarn and tops. On one side are bins and shelves for the 200-needle work, in the center are the bins and shelves for the 220-needle work, and the other side is used for the bins and shelves for the 240-needle work. Thus three of the walls of the cage are occupied by these bins, each side being a duplicate of the one shown in the sketch.

We have a girl in charge of the tops and yarns, and every morning the knitters must call for their tops and yarns between 7:30 and 8:00 o'clock, and at noon between 1:00 and 1:30 o'clock. The knitters are given a five-dozen bundle on each occasion, unless very fast workers, who re-



ceive fifteen dozen a day. They are instructed to examine the tops as they get ready to use them, and return all defects when they call for another bundle. The defective tops brought back are charged up against the separator and the ribber girl jointly, one for making them and the other for allowing them to get through. But I must admit there are not many bad tops that get through to the knitters since we installed this method.

CONTRIBUTOR No. 4004.

Cutting and Shaping Waste on Underwear.

EDITOR COTTON:

This letter is written to give you our experience as to allowances for knitting and shaping waste in the cutting of certain types and fabrics of underwear. In your July issue, on page 993, a correspondent asked for standard allowances for this waste on men's medium weight and heavy weight union suits; ladies' rayon underwear; balbriggan underwear; and fleece underwear. The figures furnished herewith apply only to men's medium and heavy weight union suits, as we do not manufacture the other items listed.

In considering the allowance for knitting and shaping waste when cutting, we of course include ends of rolls which are necessary waste in addition to what is made in shaping the garments after outlining the patterns. We have found, as a result of many tests, that our average waste produced under these conditions, amounts to 12 per cent.

This figure is based on the percentage of actual waste produced in our cutting department, in the cutting of garments which have an average finished weight of 16 pounds per dozen, or what we term a medium weight. These figures apply also to garments which we make which carry a finished weight of 21 pounds, known as our heavy weights, and mostly in wool spun styles.

I would be interested to see other concerns submit their waste figures for the sake of comparison.

CONTRIBUTOR No. 4055.

EDITOR COTTON:

In your August issue, a contributor asks for the experience of different mills as to knitting waste and shaping allowance in the manufacture of four different kinds of underwear.

I believe that it is the practice of most mills to use separate percentages for knitting and for cutting waste.

Assuming that by knitting waste is meant all loss from the yarn to the finished cloth, it will be found that four per cent is a fair allowance to cover waste in knitting, fly, washing and bleaching. This applies to net weight of yarn, the required amount of which may be calculated by dividing .96 into the finished cloth required. This figure of four per cent is about right for the usual ribbed underwear counts employed, 10s to 30s carded. For combed yarns in these counts three per cent will be found a more nearly accurate knitting loss and should apply to the usual manufacture of balbriggan underwear fabric.

In knitting cloth for fleece or napped underwear an extra allowance must be made for the napper waste; usually two to three per cent will be found to be a fair allowance. The waste in the knitting of rayon knit underwear fabric is negligible, or should be, as rayon yarn is usually bought on a net weight basis and there is no loss at the knitting machines or in the operations of scouring, bleaching and dyeing.

The waste developing in the cutting room *varies with the cut of patterns* used, the amount of shaping given to legs, arms and gussets, etc., but we consider the following waste percentages, for average assortments of garments run, sufficiently accurate for most purposes:

A.	Men's medium and heavy weight suits	11 per cent
B.	Ladies' rayons—bloomers, vests, pants, chemise, step-ins, etc.	6 per cent
C.	Balbriggan suits and shirts	8 per cent
D.	Fleece underwear—union suits—LS AC	12 per cent

CONTRIBUTOR No. 4044.

Preventing Pulled Threads in Silk Hose.

EDITOR COTTON:

In a recent issue of COTTON I read the query of a subscriber who suggested a discussion in the "Knitting Kinks" section on how to prevent pulled threads in silk hosiery, and especially in full-fashioned hosiery.

That is a thing that, in my opinion, we will always have with us, more or less, unless someone devises a knitting machine that will knit a different stitch, like a crossing of the loop or something that will keep the thread from pulling so easily.

As it is knitted at the present time, a cracked fingernail, a rough hand or even a small abrasion of the skin of the hand will cause a catch in the thread of the loop in the finished silk stocking and will put an unsightly mark in it, sometimes very hard to remove.

This subscriber says that he has a man spending practically all of his time going around the mill with emery cloth touching rough places that develop on the surfaces of machines, tables, topping tables and stands, knitters boxes, etc., and that he uses an anti-rust solution on the machines to prevent oxidation of the metal. I suspect he also has that man looking out for what another writer in this magazine termed "$100 splinters" to be found on the back of chairs, sewing and looper tables, and for "$100 screw-heads" burred by the fixer using a 15-cent screwdriver half the size to turn the screw.

In my opinion "P.F.(N.C.)" is already doing what all of us are doing or should do to keep that evil down to a

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minimum as far as his knitting plant is concerned. Is he being as careful with his hosiery after it leaves that department? Hosiery in the gray is not as susceptible to damage from that source as after the dyeing and in the finished condition. The gum on the raw silk is an effective protection. When in a wet condition they are not handled by hand except while they are being untangled preparatory to dyeing, and as a rule the hands of the workers in the dye house are soft from being wet so much, but when they leave the dyehouse, that is the time to watch for pulled threads. The boarding room is the place where a man with a piece of sandpaper in his hand is likely to have a very busy time.

The steam of the drying stocking on the aluminum board is very effective in removing the polish from the forms. The least roughness at this time will leave a mark on the finished stocking. The thing to do in this case is to watch over the inspecting table, and as soon as pulled threads are in evidence, the offending board should be hunted up and sand-papered to a perfect polish again. One should not expect the boarders to watch for that. They will not do it. They are too busy pulling stockings at so much a dozen to do that.

The troughs should also be watched closely far abrasions. The tables in the finishing and inspecting room should be covered with enameled tops. If not knocked about carelessly, a good enameled topped table should last a long time efficiently. All other tables and shelves should be kept covered with a good oilcloth.

In this work also, the operators, boarders, inspectors, pairers, etc., should watch that their hands are kept smooth and soft at all times, and without abrasions. Of course finger rings should not be allowed to be worn while working, and in the case of an operative with a piece of adhesive plaster on a finger, it would be more economical to lay the operative off, with full pay, rather than suffer the loss which would ensue.

D. N. (TENN.)

Cut-Outs on the B-5 Machine.

EDITOR COTTON:

In the January issue, "I. W. (N. C.)" discussed cutouts on the B-5 machine caused by lost motion in the drum in starting in after the machine has transferred. In the May issue, "P. S. (Tenn.)," offered some suggestions; to these I would like to add mine.

I am like "P. S.," I would not think that a soft pine wedge being driven between the drum and the frame of the machine would be a very good method to stop the cut outs. I believe that it would keep a fixer busy making wedges for these machines, as they would wear out pretty fast. I must agree with "P. S." in his plan to put new leather on the brake, also, in the bending of the brake toward the drum. Sometimes this does not give enough friction.

I think that there are at least two more causes for this trouble; one is the belt shipper drum which the brake friction works on can be slipped too far away from the machine and the brake can not be bent or sprung far enough to get enough friction to hold the drum. This can be fixed by loosening the two set screws that fasten the belt shipper drum to the shaft and driving the drum back closer to the frame, then tightening the set screws again.

Another cause is that the belt shipper drum gets slick because of oil getting on it and it seems that no amount of friction will hold it. A good remedy for this is to remove the belt shipper drum and take a center punch and roughen the side of the drum that comes in contact with the brake shoe. If there are any burrs on the drum after it is roughened, they can be removed with a piece of emery cloth and it will still be rough enough to hold it without wearing.

If any other readers of COTTON have a better method for fixing B-3 or B-5 Scott and Williams machines I, for one, would like to hear from them in the near future.

E. P. (TENN.)

Dyeing Fancy Half-hose With Celanese Stripe.

EDITOR COTTON:

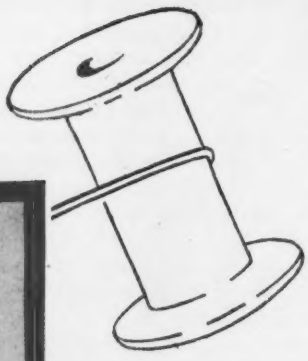
Precaution should be taken when dyeing any sort of material, especially hosiery, but special precaution *must* be taken when dyeing men's fancy hose with a Celanese stripe to be dyed in the same bath in which the goods are dyed. Almost any color stripe can be secured in a hose where the Celanese stripe is knitted into the hose.

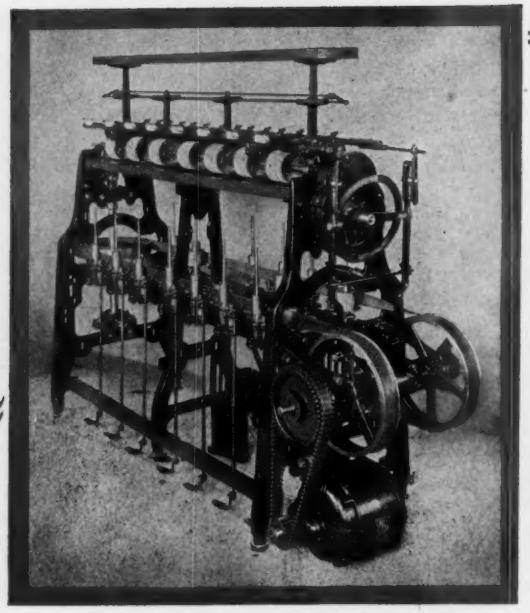
Celanese yarn is knitted in different materials. The writer is mostly experienced in mercerized top, heel and toe, with rayon facing on the Celanese stripe.

We have some trouble at times in this cross-dyeing. There are not many dyehouses that do not have a little trouble, especially in this particular sort of dyeing. One of the most important things to consider while dyeing the Celanese stripe one color, and the remainder of the hose another color, is that the temperature should not be too high, as this will kill the luster and will not give the Celanese stripe the right tone. Also, it will not look right after it is dyed.

The temperature should be run from 150 degrees F. to 180 degrees F. Now we are ready for the dyeing process. Mix the dyestuff with which to dye the hosiery, using the regular formula; put the goods in the machine, with ten per cent soap. After running in this soap solution for ten minutes, add the dye. In 15 minutes add ten per cent of salt (on some shades salt is not needed). Now we are ready for the Celanese stripe to be dyed. Select the color desired, from the Celanese percentage color card; weigh out the dye to the depth of the shade required. Always figure the amount of dye to the amount of Celanese yarn in the goods. Put the Celanese dye in a large pail, with the addition of five per cent of soap, and boil this thoroughly; then add, in proportion, in the dye machine containing the goods, one third; run for five minutes; then another third, run five minutes; then the other third, run 15 minutes. This should give the desired shade on the stripe and on the heel, toe and top also. But sometimes, this Celanese dye will affect the heel, toe and top, so there is another way I will describe in the following paragraph by which this dyeing can be done:

Get the correct shade on the Celanese stripe first, then figure from that just how badly stained the other part of the hosiery is. It is like this: Suppose a beige shade on the hose, and a gold stripe on the Celanese, is desired. The gold stripe will leave a yellowish stain on the rest of the goods. The way to remedy this is as follows: It takes black, yellow and brown dye to make a beige, so the black and brown can be used and the yellow omitted, or a portion of it.





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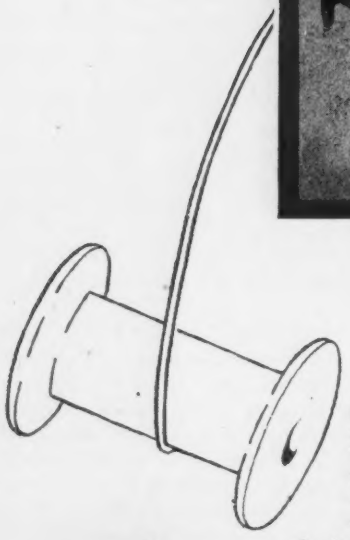

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By following the foregoing instructions and using common sense, men's fancy hose can be dyed with a Celanese stripe, but every little thing should be watched, for instance, the temperature should not be allowed to get too high. A close watch should be kept on the whole process, one thing in particular is the weighing up of the dyestuff. If the dyer will use care and common sense, the correct shade can be secured, otherwise, he can lose a great deal of money for his employers. H. F. (N. C.)

Cut-Outs on the B-5 Machine.

EDITOR COTTON:

In the May issue, in "Knitting Kinks," I notice that the subject of cut-outs on the Model B-5 and Model B-3 machines, caused by lost motion in the drum in starting in after the machine has transferred, is discussed.

To men having this trouble I would recommend, when the lost motion cannot be taken out with the brake, taking it out by moving the drum shaft collar No. 6031, drilling a hole in drum shaft No. 6054, and tapping out. Put in a leather washer, then put on a drum shaft collar and place the machine washer first large enough to cover the collar, then put a ¼-inch set screw in, and tighten it until the lost motion is all out of the drum. H. E. (TENN.)

Temperatures in Knitting Rooms.

EDITOR COTTON:

In answer to the question of "Contributor No. 3062" in the April issue of "Knitting Kinks", with reference to the best temperatures for full-fashioned knitting rooms, we have been running our machines ever since installation three years ago, with the Johnson temperature control, which he indicates he is using, and in a temperature of 78 to 80 degrees, which is the temperature he says he has been using. He added, however, that a friend had suggested that this might be too high.

We find that this is what might be termed a "central neutral" heat; what I mean by that is, during the Winter, when uncontrolled temperatures are so varied as to make knitting on full-fashioned machines something of a nightmare, the range is anywhere from 50 to 90 degress, according to the outside changes and the changes in boiler firing, and then in the Summer the temperatures are anywhere from 75 to 100 degrees, according to changes in the weather, all of which makes it almost impossible to operate with any degree of uniformity so essential to the proper operation of this type of machine, and a "central neutral" of 78 to 80 degrees is the temperature that makes possible the operation of the machines without the necessity of changes in adjustments as the seasons change.

We have therefore found in our experience that the temperature of 78 to 80 degrees, when carefully controlled by Johnson or some similar regulating apparatus, is the most practical and leads to the operation of the machines without narrowing machine changes in the Winter or Summer and between these extremes.

Your correspondent's friend indicated that this temperature might be so high as to dry out the silk. Regarding this point, we get along very well due to the use of cabinets for storing the wet-wound silk at the winders, and moistener jars on the machines, to keep the silk on the cones in the proper condition on the machines. Regarding the operatives, we seem to have no difficulty, because if they stay long enough to learn to operate they have been with us long enough to become accustomed to working in the temperatures best suited to the machines. In the older types of mill buildings ventilation without interference with the temperature at the machines is difficult, but in the newer types of buildings this is a very easy matter, and, of course, the operatives must be considered in this regard as well as the silk and the machinery, or else losses by illness and labor turnover will result.

We are of the opinion that "Contributor No. 3062" has the best all-around condition with a controlled temperature of 78 to 80 degrees, and that he should carefully consider the "condition" changes that might result should he attempt any experiments toward some other control.

CONTRIBUTOR No. 4014.

Cleaning Methods for Circular Machines.

EDITOR COTTON:

Answering the inquiry with regard to cleaning Scott & Williams and Banner machines by the compressed air method, I will state first that I do not favor this method. My disfavor has been the result of eleven years of experience on these types of machines. In our plant at the present time we have three hundred Model K machines and nearly as many Banners. Many years ago we had no method of cleaning our machines, so we started the compressed air method. After one year's trial we discontinued it. One of the reasons was that stated by your contributor: causing the needles, sinkers, cylinder jacks, etc., to soak up the black oil, which is a substance of graphite, grit and blown lint. When this occurs of course several stockings from each machine are defective until the needles, etc., are cleaned up. We found that with the new type Scott & Williams sinker rings it was almost impossible to clean the lint from the sinkers in a satisfactory manner, especially where it became packed in fairly hard in the ring.

Our other main reason was the blowing of lint, or butts of needles that were lying on the machine at the time, into the pickers, set-up bracket parts, etc., causing mechanical trouble and smash-ups, regardless of our precautions to prevent it at the time of cleaning.

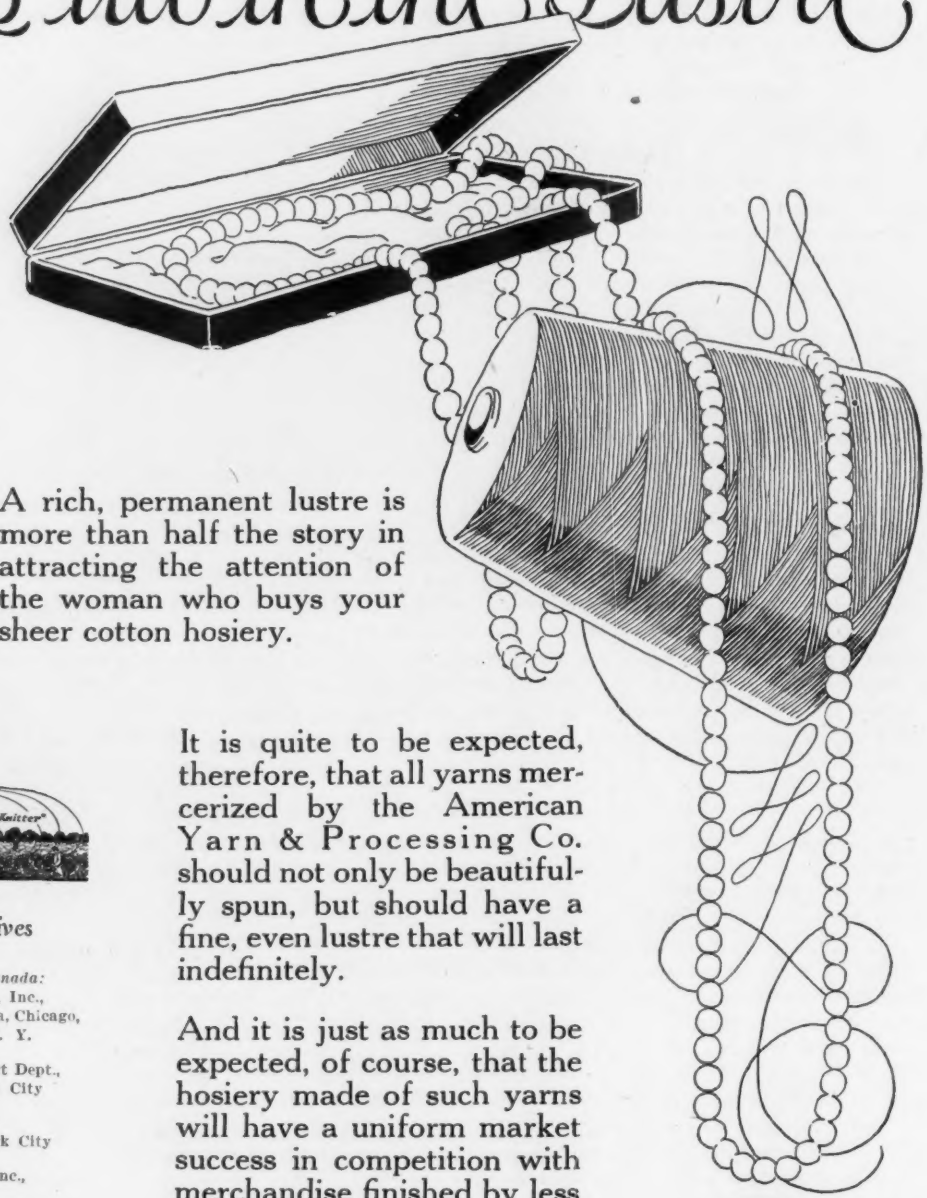
I do believe, however, that compressed air is a valuable method of cleaning such types of machines as ribbers, underwear machines, etc., which are open and easily cleaned.

My experience with the vacuum system has been limited, but I do not believe it is practical for the thorough cleaning of cylinders. We had a vacuum blower on trial, but did not approve of it as being practical.

Our present method of cleaning our machines is to have a cylinder cleaner, who does nothing else but clean cylinders and machines *when they need it*. When a cylinder needs cleaning, this cleaner takes the cylinder from the machine, removes the needles and sinkers, and uses compressed air here for the removal of lint, oil, etc., and washes the cylinder in a gasoline solution for a thorough cleaning. When the cylinder is ready for the machine, this cleaner, before inserting the cylinder, uses cleaning rags in the removal of all oil, lint, etc., as is possible, from the tops of the machine, using precaution that nothing drops in the ring while doing so.

I know it to be a fact in many mills that the managements stress the fact that the tops of the machines must be kept free of all oil and lint, with the belief that the

It's all in the Lustre



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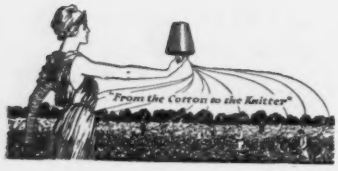

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machines will run better. Personally I feel this is nothing but imagination. A little oil or lint on the pickers, set-up brackets, etc., does no harm. As a matter of experiment we did no cleaning on one set of machines for one year, and that set ran better in waste percentage than the others.

Our operators daily keep as much of the oil and lint as possible off of the tops of the machines, with cleaning rags, which makes for neatness, and we find this method is satisfactory until the time when the cylinder needs cleaning, at which time a more thorough cleaning is made, as explained.

It has been our policy to let the machines run as long as they are making perfect work, regardless of whether the sinkers are stuffed or not, but when they start giving trouble, they are immediately cleaned. We have found that if a cylinder is cleaned, when it really does not need cleaning, more or less trouble results in getting the machine adjusted again properly for good running conditions.

CONTRIBUTOR No. 4003.

EDITOR COTTON:

In a recent issue "Contributor No. 3051" asked some questions about cleaning circular knitting machines. He said his method of using compressed air for cleaning sinkers, etc., makes waste, and causes some of the hose to be damaged by dirt, lint, etc. He wanted to know of any experience with vacuum cleaning for this purpose.

I do not know of anyone using the vacuum system for cleaning knitting machines. I know that quite a few mills use compressed air for cleaning, but my objection to compressed air has been that it causes compressed lint in the fine crevices. The compressed air will hardly remove lint that cannot be reached with a needle or fine probe, but in removing the accessible lint, some of the other finer particles are blown into the sinker channels where they will do the most harm. I believe the better method is to clean the machines daily and pick the lint from the sinkers once a week, then when the sinkers begin to run tight it is time to tear the cylinder down and clean it properly. However, if I was going to use air I think I would much prefer the "sucking" kind to the "blowing".

C. J. (N. C.)

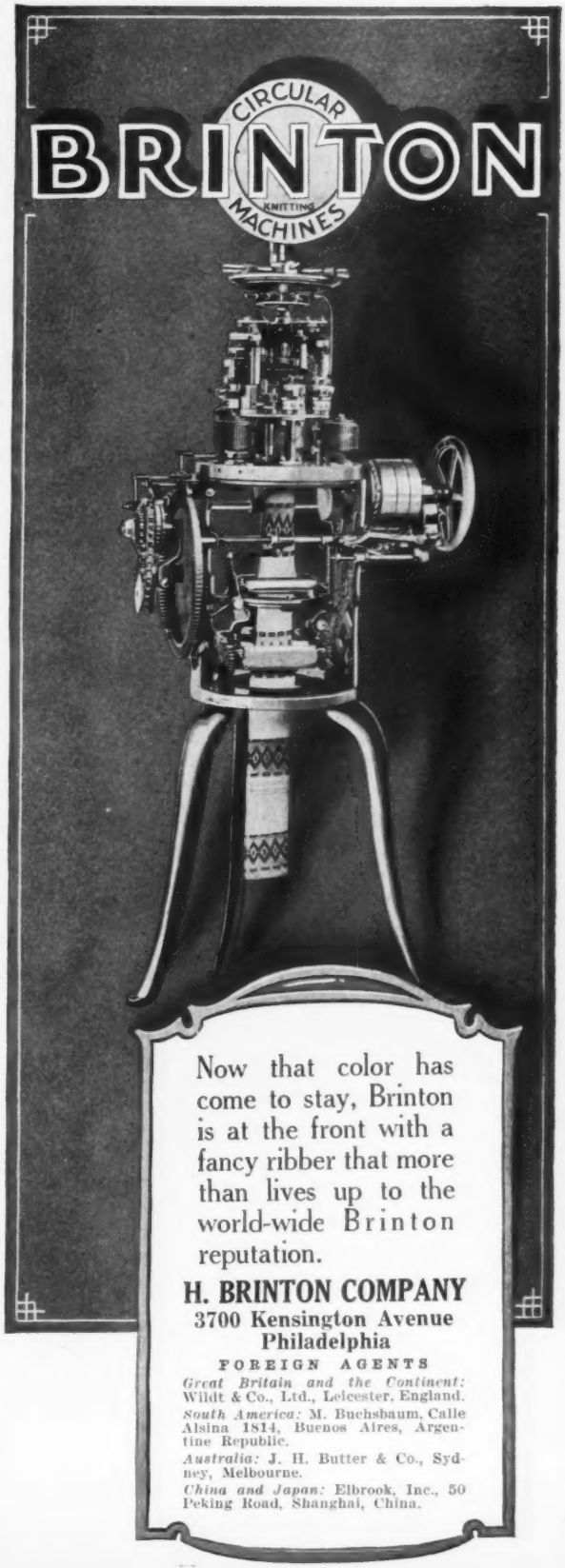
Tangled Yarns and a Remedy.

EDITOR COTTON:

Knitters, like everyone else, have their troubles. In the manufacture of cotton ribbed underwear, there are many little things which one may overlook, but yet, it is the *little* things that count.

Here is one of these so-called, "little things," although it seems a mere trifle, but it will save, or help ot avoid some troubles, even if small ones.

Nearly all knitters have had the experience, after tying on a full cone of yarn and running for a while, of seeing the yarn pull the thread down from the stop motion, that is, see the yarn or thread fall from the stop motion. Upon investigation, the knitter will find, (in some cases) on the bottom or large part of the cone, several, or perhaps only one or two, threads caught under the edge. This is caused by careless handling, or the carelessness of the winder or perhaps the winding machine which winds the yarn on the cone, making this yarn slip over or under the edge of the cone, causing a strain so great on the thread that it either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Vulcanart
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If it's worth making, it's worth marking

pulls the thread down from the stop motion or else breaks the thread making the machine press off, causing trouble and delay, not to mention the losing of one's temper .

To prevent this little trouble, when one of these kind of bobbins is found (if the yarn is not too bad), take this yarn with the fingers, where it is slipped over the edge of the cone, and push or pull thread up and over this edge so as to release the catch. It will then easily (or at least should, unless something else is the trouble) run off and unwind smoothly.

CONTRIBUTOR No. 986.

Causes for Irregular and Crepe Stitches.

EDITOR COTTON:

I notice the inquiry of "Contributor No. 3032" with reference to irregular lines and crepe effect in silk stockings.

This is the problem common to all silk hosiery manufacturers today. It has been worse for the past year than ever before, and I am persuaded that it is largely due to the nature of the silk, which seems unusually harsh and wiry. When the gum is removed the silk does not have the fluffy elastic feel that silk should possess. When the stocking is being boarded, the pressure of the fingers will leave finger marks, and a slight twist of the stocking over the edge of the board makes diagonal lines across the stocking. The only remedy I have found for this is careful handling in boarding. The operator should touch the stocking as little as possible in the silk, making the adjustments when holding the cotton parts of the stocking. It is a good plan to pnll the stocking on the board with the back seam as near to the correct position on the board as possible so as to prevent a lot of twisting of the stocking on the board. The back seam should be placed in position before the stocking is pulled down taut on the board and before it has time to dry and form creases at the edge. A slow boarder should place the seam first and then go back and make the heel and toe adjustments, then pull the stocking down by the cotton hem. The steam pressure on the boards should run just as low as possible to dry the goods.

As stated before, I believe the most of the trouble can be attributed to the silk, but I think the throwster can improve it by increasing the conditioning oils and softening the silk more.

I have carefully examined the sample this contributor submitted with his question, and am of the opinion that the fabric can be improved by some work on the knitting machines. He stated that he was using Scott and Williams 3½-inch, 200-needle machines, with No. 90-54 needles, using 9-end 13/15 Japan silk. The distortions in the stocking indicate that the needles and sinkers are not taking care of the harsh silk as they should, and the stitch is not casting off as cleanly as it might. I offer the following suggestion:

Take out all unnecessary lost motion in the needles at the point of the stitch cam.

Put on new cylinder bands, and clean the cylinders.

If the sinkers are badly nicked, put in new sinkers, add new sinker band wire, remove all stiff latches and use a good grade of stainless spindle oil on the latches and sinkers.

I feel sure that some of these suggestions will prove helpful.

L. N. (N. C.)

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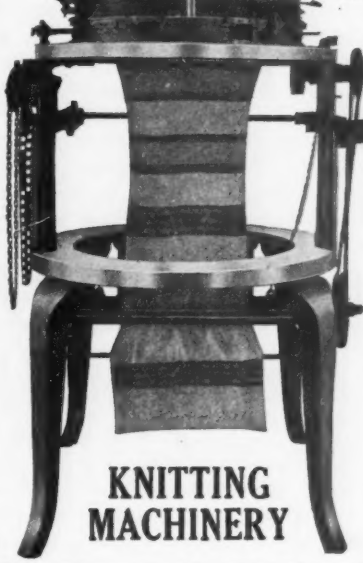

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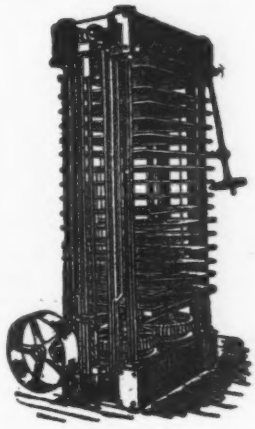

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The Right Kind of Rules.

EDITOR COTTON:

Rules are good things to have, providing they are the right kind.

Good rules are important and essential in business of any kind, the knitting rooms of underwear mills being no exception.

But here is the point. Many places of business take pains to make a lot of small rules, some of them silly and useless, whereas, if they would have a few real rules, and really enforce them, I am sure it would be better, and greater results would be accomplished than in having a larger number of small rules and not having them fully enforced. Doesn't this sound reasonable? In other words, it is just exactly like a man owning several used or second-hand cars. They will all run a little, but none really run well.

CONTRIBUTOR NO. 990.

Mechanical Care Cuts Costs.

EDITOR COTTON:

The purpose of an investment in a hosiery mill is to receive a fair margin of profit on the investment. This profit depends much on the policies of the management. The thorough understanding of the methods of production so as to produce results, from all the departments concerned, together with the cooperation of the department heads and their employees are the necessary qualifications for success in this end of the business.

Many mill managements are wondering why it is that their costs are high in the producing departments of their mills. They have made investigation of their costs but have not been able to reduce them sufficiently to afford a reasonable return on the investment. Other mills have been able to do this and are often the leaders in the field, and always will be, because they know the proper policies to use to get the necessary results.

"What are these policies?", is the question that arises from the troubled manufacturer. "I would like to know what they are so that we can get out of our difficulties."

In the first place, hosiery is produced on knitting machines. The quality of the hose that comes from these machines is the result of care in manufacture. This quality is further reflected in the necessary personnel required to handle these hose from the moment they leave the machines to the time they are sold over the counter of the retail stores of the country. This last point in my opinion, and according to my own experience, is one of the largest items of expense in any hosiery mill and one that is overlooked, to a large extent, by some mills.

Hosiery is sold in these days of hard competition largely on quality, and on quality merchandise depends the success or failure of a hosiery establishment. But many manufactures are producing quality hose at the expense of high costs, during process of manufacture, and this is the point the writer wishes to discuss, to show why these costs are high and how they can be remedied.

The writer recalls a mill whose machinery was turning out a high percent of imperfects. As this mill had the reputation of making quality merchandise, they would not take any chances on this imperfect work reaching the public; otherwise their reputation would be ruined, which of course would be natural. But instead of getting at the root of the trouble, they instituted a system of inspectors all through the plant, to make sure that no imperfect work went through as perfects. Inspection is a necessity in every hosiery mill, but in this mill it was overdone. They had a lead inspector, assistant inspector, second inspector and follow up inspector with an assistant, etc. If I remember correctly, there were about fifteen inspectors which were not needed, if the machines were turning out the class of work they could turn out if the conditions were right.

In this particular case the supervisor who had charge of the machinery, and the quality of the work, was overloaded. He did not have a sufficient number of fixers to take care of the machinery in the proper manner. What machinists he did have were mostly young apprentices. Although these boys were trying their best to keep the machines in condition they were so overloaded with machines that they could not possibly keep them all going properly. Half of the machinery in this mill was well worn and could not turn out perfect work without careful repairs. There was no one to do this work, and no place or tools to do it with. Is it any wonder they had to have such a large force of inspectors to inspect all the work? Is it any wonder the costs were high?

The manager, in this instance, was not a technical man. He had never worked on hosiery machinery. Whenever the supervisor would tell him of these conditions he did not know whether to believe him or not; most of the time he didn't. This manager spent most of his time on the other departments of the mill, hiring extra hands to handle the imperfect work that the knitting department produced. I do not know whether this executive is still holding his job, but if he is I cannot conceive how he gets away with it.

If the supervisor had the proper organization for taking care of the equipment, the imperfects could be cut down to such a small figure that this extra force of inspectors and so forth, down the line, would not be needed—one way of cutting costs. If the machines are in good mechanical condition, less needles are used; less parts are used; more contented workers result, because they are able to draw a larger salary, due to the good running condition of their machines; and they take better interest in their work. Another way to cut costs.

And what about the management? Their costs are lowered because they receive the set price for merchandise instead of a cut price for imperfects. This is really an example of a condition that existed in one mill. Does it exist in others?

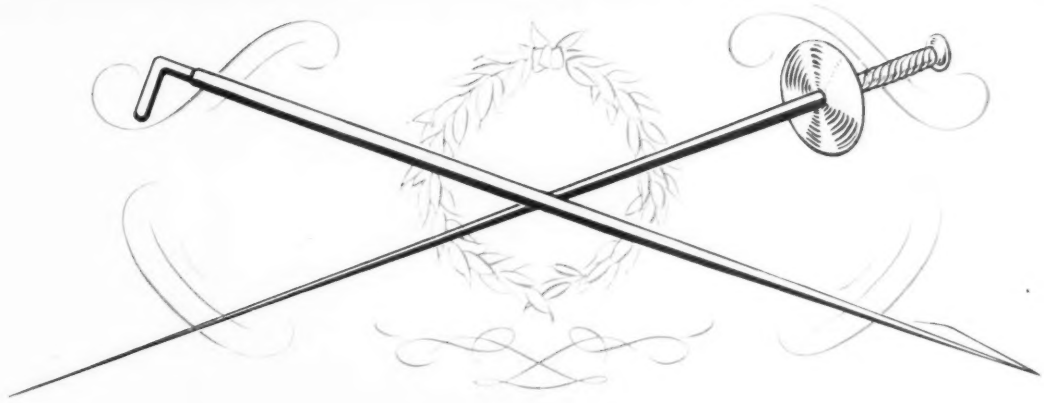
CONTRIBUTOR NO. 857.

Additions to York Executive Staff.

York Heating and Ventilating Corporation, Philadelphia, Pa., announce the following additions to their staff: Paul Campbell is now plant manager of the factory located at Bridgeport, Pa.; Herman C. Kappler has been appointed educational director, a newly created position for the training of new salesmen entering the organization; C. R. McConner has joined the staff as a district representative; he is manager of the Detroit office.

Change in Warren Soap Organization.

Warren Soap Manufacturing Co., announces a reorganization of the company and the change of the firm name to The Warren Soap Manufacturing Co., Inc., with offices at 77 Summer Street, Boston, Mass.



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EVERY OTHER feature of production may be conducive to good knitting . . . but if the Latch Needles are not up to maximum there will be disappointments.

There are certain essentials which draw a definite line of demarcation between the excellent and the mediocre in Latch Needles. Such features as smoothness, consistently fine temper, expert design are characteristic of the superior type of needle. But even above these must be placed the feature of *uniformity*—that exactness of dimension without which needles cannot give satisfactory results.

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Kinking Yarn and Other Troubles.

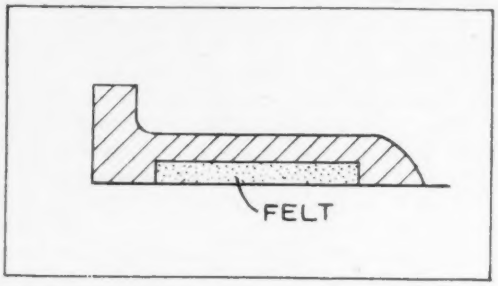
EDITOR COTTON:

We are using Celanese yarn in a fancy pattern half-hose, and have had considerable trouble with kinking. We get this yarn in skeins, and the trouble occurred on both the bottle bobbin winders and the knitting machines themselves.

After trying a number of things to eliminate this, we finally hit on a remedy which I thought I would pass on to the readers of "Knitting Kinks." If anyone has a better one, I would be pleased to know of it.

We solved it by adopting a new conditioning solution. We use one gallon of olive oil, and one quart of kerosene, and put into this a lump of mutton tallow about half as big as a hen-egg, which is dissolved before it is added to the oil. The packages of yarn are opened up, and this solu- from 24 to 36 hours or longer, if possible.

This treatment has not entirely stopped kinking, but it has certainly helped a great deal toward that end.



Showing How the Felt Was Applied to the Binder to Hold Yarn.

I also found that on some of our Scott & Williams B-5 machines, the Celanese or rayon yarn would have a tendency to slip out from under the clamp or binder. When we find a machine with this trouble, we file out the bottom side of the clamp and glue in a piece of felt, heating the metal when we glue the felt in. This felt has a tendency to stop this slipping as it holds the yarn all right. If the felt gets slick it can be "roughed up" by scraping it with a pocket-knife. In making this change we substituted a lifter spring for the regular spring on this clamp or binder.

In connection with winding rayon, I have had the experience of looking almost everywhere for the cause of snagged yarn, and finally found it to be a small burr on the underneath side of a porcelain guide on a winder. Now I think it a good idea to check up on little unexpected things like this. D. F. (N. C.)

Lockwood, Greene & Co., Engineers, Re-Organized.

The first step in the contemplated reorganization of the finances and operations of Lockwood, Greene & Co. Inc., is the proposal to sell the engineering division, which includes the engineering, architectural and appraisal business, to a proposed new company, Lockwood Greene Engineers, Inc. The new Massachusetts corporation is formed by Albert L. Scott, Chester S. Allen ,and others who are now, or were formerly, officers, directors, stockholders, or otherwise associated with Lockwood, Greene & Co. Inc., and to whom will be issued for a nominal consideration the entire no-par value common of the new company.

Mercerizing Cotton

(*Continued from Page* 1124.)

brine is circulated, or which may be supplied with ice if a low temperature is needed (remember that strength and temperature are given elsewhere). By means of iron guide rollers, which are placed below the surface of the caustic lye the cloth is passed through the lye, then squeezed by the first nip, impregnated once more and again squeezed through the second nip. In order to prevent the cloth from contracting at this stage or curling at the selvages, it is now passed over a number of sheet iron drums, see *B*, Fig. 1., which are placed closely together, and which are turned by the cloth. During the passage over these drums time is given for the caustic soda to thoroughly permeate the cloth.

From here the cloth is conducted to the second mangle, which is similar in construction to the first, and in which the cloth is again twice impregnated in the caustic soda and twice squeezed, thus assuring a complete impregnation, even when the machines are working at their highest speed. See Fig. 1, which shows the two mangles, the two squeezes given by each machine and the connecting drums.

The impregnation is now followed by the stretching and the washing on the tenter. Two endless chains of automatic clips narrow at the entering end of the tenter, seize the cloth by the selvages and stretch it gradually to gray width, after which the chains run parallel to the delivery end. Perforated spurt pipes supplied with hot water by steam driven pumps are provided below and above the cloth. By means of these hot water is showered on the cloth from both sides. In order to obtain a wash liquor containing a fairly high percentage of caustic soda, which may be used directly in the boiling of the kiers or which may be evaporated in multiple effect evaporators, the washing is conducted on the counter current principle. The hot water which is showered on the cloth before it leaves the tenter is pumped to the last set of spurt pipes; it then runs through the next trough from which it is forced by the pump into the second set of spurt pipes. The wash liquor now runs into the second box and from this it is pumped into the first set of spurt pipes; after using it is collected in the final tank, from which it passes either to the bleach-house or the recovery plant. Scrapers with curved steel blades are fixed above and below the cloth and assist in the removal of the water and soda more effectively.

The cloth, after leaving the tenter clips, passes next into a washing cistern, then through heavy rubber covered squeezing rolls into a weak acid solution in order to neutralize any caustic soda that may remain in the goods and finally washed entirely free from acid in the last two wash boxes.

The power required to drive the range is about 18 to 20 h.p.

In many mercerizing plants only one padding machine is used, but the strength of caustic and the temperature are the same, viz., 45 to 50 degrees Twaddle and about 60 degrees F. Mercerizing tenters have also been built in which the clips run parallel for some distance and the goods are only partly stretched, then the water is spurted on the cloth and the cloth is gradually stretched to its full width, on reaching this they run parallel to the end and the washing is completed. In all mercerizing machines in which the washing is to be conducted on the counter cur-

rent principle fairly good lyes are obtained by the wash water and these may be used again in the boiling of the kiers. It is now the practice however, in a great many places to evaporate the wash water in multiple effect evaporators and make caustic afterward with brine.

With reference to this it must be remembered by the mercerizer that the caustic lye, though entirely composed of caustic soda when used in the mercerizing box becomes carbonated by the air in the handling and washing processes. This is all right if the goods are only going to be boiled in it in the kier or otherwise, but if the lye is to be evaporated for mercerizing purposes then the carbonated soda, which it largely contains, must be converted into caustic soda by means of caustic lime, which lime is slacked and used in the paste form, the lime combines with the carbonate of soda and forms carbonate of lime (chalk) which falls to the bottom in a white powder and the caustic soda is left alone in the solution. Carbonate of soda, no matter how strong, will not mercerize.

I would also say that a range with two tandem padders is the best to use, as in Fig. 1. Caustic soda is bad for the operatives' hands, and the less it is touched the better for them. In a range it requires no touching; it runs itself if guided in right. Moreover, the goods may be freed from caustic soda, if so desired, nearly and with a minimum quantity of water, by blowing powerful jets of steam against the cloth, but then it is more carbonate than ever and requires more lime.

The stretching apparatus, namely, the chain and clips of the tenter must all be very strong and made from malleable iron, as brass will not answer where caustic soda is used. The length of the tenter is governed largely by the kind of work to be done, say 40 to 50 feet or longer. This does from 10,000 to 15,000 yards per day. The washing must proceed under tension before it lets go, or in other words, until the caustic is washed to less than 24 degrees Twaddle. At 24 degrees Twaddle the caustic ceases to function. We would say that if two padders are used and the length of tenter increased to about 80 or 90 feet it is possible to run 100 yards per minute. So far as the writer is concerned the following is the best way to work mercerization on all fairly light goods:

(1) Singe well and run through diastafor and let lie all night. All this in one operation; diastafor liquor not to be over 112 degrees F.

(2) Wash in cold water on washing machine, soap through scutcher full width, then wash in hot water, then rinse in cold water and squeeze well all at one operation in four box soaper.

(3) Mercerized in this case, the cloth being wet it must get a thorough and even saturation in the caustic which must be clean(the two-padding machine method as shown in the drawing is the best). This caustic solution should be maintained at a strength of about 50 degrees Twaddle (no less) and at a temperature which must not exceed 65 degrees F. It must remain in contact with this at least one minute.

(4) Boil in the kiers in the caustic washed from the goods, no further recovery being necessary, as this caustic contains sufficient carbonated soda to make the liquor of the right mixture.

The tension on the tenter ought to be carefully controlled so that the goods will have the right luster without tearing them. Further, the goods must be given sufficient washing during tentering and before boiling to reduce the caustic below the minimum mercerizing strength, which is about 20 degrees to 24 degrees Twaddle. This is part of the mercerizing process and comes before boiling in caustic soda and soda ash.

After boiling, the goods are bleached if so desired.

I wish to say that the way usually carried out in this country is to evenly saturate the goods on a three roll padder with caustic then run it on a 60 foot tenter with spurt pipes overhead where the goods are stretched to their original width and the washing begun and then finally washed to remove the last traces of caustic. A range like this running about 60 to 65 yards per minute ought to do cheap work all right. By this method the caustic solution gets dirtier but the goods are slightly heavier.

It is best to dissolve the solid caustic, which is in drums, by placing the drum or cask above the tank with the bung hole down, then blow steam slowly into the hole and let the caustic run slowly into the tank or receiver below; you want it finished about 65 degrees Twaddle and cool, (below 70 degrees), use ice if necessary in the tank. This saves the hands as there is no need to touch it.

For imparting a scroop to cotton, either yarns or cloth, formic acid is distinctly superior to either tartaric or acetic acids. It gives to cotton a rustle which is very like that of silk. Experience has shown us that it will stand more than the other acids and it is cheaper; it also lasts longer.

To give a good scroop to mercerized cotton dyed with basic dyes, which are in many cases fast, proceed as follows: Ground the yarn or cloth with four per cent of tannin and a trace of hydrochloric acid, and two per cent of tartar emetic for dark shades, using less tartar emetic and less tannin for weaker shades. Then wash well with weak soap liquor, rinse and dye. After dyeing give a fairly heavy soap bath and liven by giving 8 c.c. of formic acid to every 1¼ quarts of bath. The dyed goods will come out fast to washing and have a good feel. If the goods are required stiffer, add to the livening bath about two per cent of its weight of glue. It is quite customary in dyeing with basic dyes to add some acetic acid to the dye bath, but formic acid in the same way answers better, especially if dissolved with the dye. Not only is the shade better, but all danger of bronziness in the dark shades is averted. Formic acid also helps leveling, for it must be remembered by the dyer that mercerized goods are bad to dye level after mercerizing.

[Editor's Note. This is the last of three articles on this subject by Mr. Nanson.]

Du Pont Announces New Colors.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., announce the production of three new colors, Pontamine Fast Blue 8GL, Ponsol Olive AR Double Paste and Sulfanthrene Viole R Paste. It is claimed that Pontamine Fast Blue 8GL is very fast to light and can be applied with satisfactory results in the Franklin, the Chattanooga machines, the padder or the jig. It is recommended for the dyeing of cotton. Ponsol Olive AR Double Paste is one of the cold vat dyeing colors, suitable for the dyeing of cotton, silk and rayon and can be applied in all types of machines. Sulfanthrene Violet R Paste is claimed to be very fast to washing and can be dyed on all types of cotton goods and may be used in circulating machines. It can be used for the dyeing of silk and rayon whenever a high degree of luster is desired.

The Knit Goods Market

Hosiery.

RUNNING true to tradition, August proved the most trying month of the year for the hosiery trades. Better than a normal stage of distribution was maintained in silk lines, notably in women's full-fashioned. A disturbing phase of the situation, one which may remain for some little time to keep manufacturers perplexed, is the matter of price, in which retailers have been the outstanding factor, driven as they are by the keenest competition among themselves in the larger cities, to exert pressure on mills for concessions, while, it is evident, they have suffered some recessions from their arbitrary per centum of margin on turnover.

Some interests has visions a month ago of a price battle, due, it was believed, to be fought out by Fall. Fear that sharper competition than has existed may be expected can be attributed in part to an upset condition in pointed heel hose. This was foreseen when first the Gotham Silk Hosiery Co., owner of the patent under which the pointex is manufactured and distributed, began licensing mills selling to jobbers. Manufacturers to that time were able to maintain the resale price list. Some weeks ago a New York jobber cut the price and markdowns in some of the department stores followed. Then it came out in the trade news that at least three mills not licensed by the Gotham Co. were making the pointed heel, and dealers since have been buying it in the open market. Formerly selling for $1.65 a pair, the pointed now is on sale in some stores for $1.25.

With this break in the prices for a popular type of stocking it may not have been surprising that keener competition in strictly staples developed. A big question among manufacturers and distributors now is, can the Gotham company hold its licensees in check? The latter now are, to a considerable extent, left to bid for the business in this line, which until quite recently was stable. If not, then, factors assert, the door is open to competitive buying, particularly since it is commonly reported that the number of unlicensed mills has been swollen to five—two in Philadelphia, one in Wisconsin and one each in Massachusetts and New Jersey.

That a price war seems likely to be averted is indicated in sharp curtailment of hosiery output, beginning in June. Although more full-fashioned machines were in place than in May, production of full-fashioned declined by around seven per cent, as indicated in the figures of 316 identical establishments reporting for the two months. June also showed a sharp decline in output of women's seamless hose of rayon and silk and rayon in combination. There is accounted for nearly 68,000 dozens of full-fashioned rayon, comparing with around 37,000 dozens in May and less than 1000 in June of 1927. This doubtless represents, in part, the increased production of Bemberg hose, which, according to manufacturers and merchants, has made greater and more rapid strides than any other item in hosiery. And now it is being made with the pointed heel, also in chiffon numbers.

Mills in June, it seems apparent, were influenced by predictions of a price battle, and to sidetrack it, produced less hosiery. Even full-fashioned silk was in slightly diminished production in June comparing with the corresponding month for last year, despite the fact much new equipment had been installed since the Summer of 1927. Making comparisons with June of 1927, rayons fell back by 25 per cent and silk-rayon by 16 per cent, while cotton and rayon cotton hose for women production dropped by around 50 per cent. Much progress therefore has been made in establishing a better balance as between output and market demand, so that it would appear the price decline has abount run its course, such a conclusion being subject, of course, to developments in the way of introduction of economies for reducing operating cost.

A leading full-fashioned mill is known to have experimented with the operation of four machines by one knitter, with a complement of helpers. The idea, it is understood, is to so reduce knitting costs, as to be able to put a standard silk to narrow mercerized hem on the market for a dollar a pair, as a blow to mongrel types and irregulars exploited by so many retail stores for that catchy price. There is, at any rate, something in the air to cause some manufacturers to proceed with greater caution.

It was the boast of direct-to-retailer mills last year that they were better situated, relatively, than those distributing through jobbers, and there seemed some ground for that boast. Now, it appears, the situation is changed,

Market Conditions in Brief.

MILL stocks of womens' silk hose were much reduced by heavy buying by large retail stores for Summer special sales. Buyers were able to get some very good full-fashioned at the lowest prices in many years, and the best value in dollar stockings was presented in many instances. Dollar full-fashioned Bemberg is in increasing sale, although having a new competitor in new types of rayon, and has been a factor in the efforts of mills to supply an acceptable dollar full fashioned silk. A surplus of fancy half-hose for men and sharper competition has forced some mills to resort to more costly construction for the moderate price brackets. Although there is much primary market activity in hosiery, prices are unsteady, but may stiffen some on curtailed production during Summer.

Light weight underwear for men had an unsatisfactory opening, on unexpected fluctuations in cotton, but due mostly to general apathy among buyers and seasonal dullness in textiles generally. Men's heavyweight cottons are inactive in sympathy with light weights. Numbers of manufacturers of women's cotton underwear report satisfactory bookings of medium weights and larger sales this year of light weights than in 1927.

Sweater jobbers have been unwilling to buy ahead, except of strictly staples and fancies from a few mills specializing in well established novelty lines. August business fell far behind expectations, but there seems no doubt buyers will operate more actively in the next two months. Bathing suit interests are believed to made a cleanup of stocks during the July-August heated term.

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insure exceptionally good results in combination with rayon for both knitting and weaving. Their dependable strength, lustre and uniformity are universally recognized.

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CHATTANOOGA, TENN.

STRICKLAND
SAMPLE DYERS

the jobber mills apparently having the easier sailing. But they have been letting retailers in at attractive prices, which is the explanation for the quieter conditions among retailer mills.

The Philadelphia mill which the Gotham Silk Hosiery Co., two years or more ago acquired from the Largman Gray Co., since removed to Croyden, Pa., was closed down August 1st, for an indefinite period, according to announcement at the time. It is intimated operations may not be resumed for several months. Two Philadelphia mills of another large direct-to-retailer manufacturer are idle, and no one seems to know when they will again become active. Thus at least three retailer mills in Philadelphia are not producing, and several are operating part time, usually three and a half days a week.

Fall Prices for Retailers Late.

There is interest in the fact that the retailer mills have been tardy with naming Fall prices. Some say there probably will be no changes, but that announcements may be expected before the middle of September. By then, it is felt, there will be shed more light on conditions in the markets as a whole. A great deal of silk hosiery was taken by retailers for their August sales, more than in perhaps the corresponding month of any recent year. This, in conjunction with the deep cut in production in June, and not much increase in July and August, is held as a good augury for Fall.

Illustrative of the ends to which department stores may go in competing for the favor of the consuming public, two such establishments in Philadelphia, may be cited. Lit Brothers started the ball rolling by putting in stock a line of full-fashioned silk to 4-inch hem for selling regularly at a dollar a pair, every pair guaranteed perfect, and the stockings being made with the several toe and sole features which constitute strong talking points. Gimbel Brothers followed in the course of a few weeks with silk from toe to top, also with the talking points, for $1.28. Both lines are of 42-gauge, seven thread silk. Gimbels' made a play on freshness of silk, but did not advertise to the public, simply circularizing their trade. The silk was described as from "fresh cocoons, freshly reeled and freshly spun, just imported and hurried here on express steamers and fast rail express", and it was stated in the circular, "the hosiery is just being woven and dyed."

The hosiery was ready for delivery to beginning August 5, and inquiry at the store brought the statement that there was a tremendous response to the circularizing, a large force of girls being engaged filling orders for a week or more after the announcement went out. One statement in the circular was that samples of the stockings had been submitted to the United States Testing Co., with eight pairs of hose bought in department stores and specialty shops and were found to be superior in tensile strength, durability test and bursting strain to any of the other specimens of equal weight. The claims made in the circular were viewed in the trade as without a parallel in merchandising, barring those once made by the Real Silk Hosiery Co., when selling to consumers through canvassers.

Seamless Mesh Hose Is Quieter.

Concerns in the East which had been selling seamless knit mesh hose are putting no more in stock. The nets got a late start, machinery builders promising deliveries before they could estimate demand. Meanwhile cheap apologies for the genuine net came on the market, were not liked, and detracted from what doubtless would have been widespread interest in the perfect seamless. Dealers say they suffered so much disappointment that, having disposed of their holdings, they are through with the mesh stockings for this season and would approach them cautiously for the next. The full-fashioned net, at $2.95 to $3.75 a pair, is still moving, but in no great volume. A retailer here and there in the fashionable shopping centers says it will be worn by ultra-fashionables through Fall and into Winter.

Newer Fibers are Receiving Attention.

Since the introduction of the Viscose Co.'s Dulesco non-luster yarn for hosiery there seems a question whether Bemberg will continue to grow in favor. It is a strong item just now, and apparently is gaining, as more mills are making it, selling their production, and some report sold up for several months. According to a direct-to-retailer manufacturer "there is no profit in Bemberg except for the American Bemberg Corporation and the knitters", who are paid the same piece rate as for pure thread silk. White Bemberg is one sale in one large store for 85 cents, for regulars, which is the ruling price for irregulars in colors.

The Berkshire Knitting Mills is the largest American producer of Bemberg full-fashioned hose. Manufacturers in Reading who have not begun its use say they are too busy with their silk lines to make any change. Some of the Reading mills making 42-gauge seven-thread silk to welt are operating day and night. One mill is selling to a chain of stores in which the stocking is priced $1.19 a pair, and as the mill is adding 100 per cent floor space, for doubling output, it is assumed the chain is a good customer and that this type of stocking will continue a popular number in the moderate price range.

While comparatively little Dulesco hosiery has gone into consumption, it is said to be well received. A line made in a Reading seamless mill, carrying the pointed heel, is one of the mill's strongest numbers. The stocking goes over the counter for 59 cents a pair. A jobber shows a line of non-luster rayon from toe to top for the 50-cent bracket. The same house carries a pure thread silk line of pointed heel which shows a good margin of profit for retailers selling it for $1.39.

There appears to be developing a better outlet for women's seamless silk and combination yarn hose since some of the larger department stores are featuring this type of stocking, in the better grades, for building up their business in the basement departments. Some few manufacturers are known to be delivering a great deal of fine gauge circular knit silk and the newer kinds of rayon for basement sales; in fact, they are busier than in a long time. While some chain store organizations will offer no seamless hose to sell for more than 50 cents a pair, others are featuring it for a higher price. The Colonial Knitting Mills is one of the few spring needle establishments operating to capacity and selling its output. A while ago it had an accumulation. Now its orders are absorbing production —one evidence of an improvement in conditions for mills operating circular machines.

Speaking of dollar full-fashioned silk hose, a Philadelphia manufacturer is presenting an attractive line to retailers. It is bought in the gray from a southern mill and

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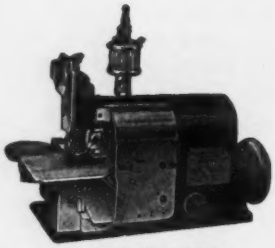

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For simultaneously trimming and joining ends of cotton, silk or woolen piece goods with a

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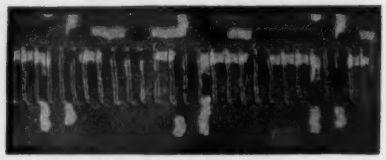

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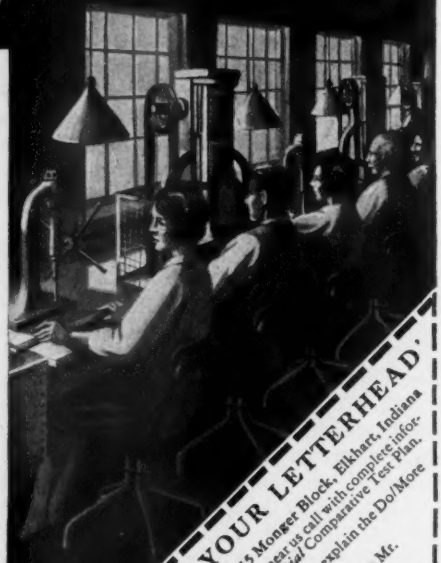

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finished in the Philadelphia manufacturer's plant. His saving on cost of production and his slight margin on dyeing and finishing gives him a profit that could not be gotten out of like goods made in Philadelphia, while the southern manufacturer need not offer his line in the general markets. In this respect this manner of merchandising is viewed as serving a very good purpose for both manufacturers.

Southern Full-Fashioned Output Increasing.

It is estimated by competent authority that by the end of the year there will be 600 full-fashioned hosiery machines in the South. This means 150 sets each of three leggers and one footer, with an estimated yearly output of close to 2,000,000 dozens. The estimate is based on a survey of the American full-fashioned industry as of January last, when there were approximately 10,000 machines available for production, 65 per cent of them being credited to Pennsylvania and around 10 per cent each in New Jersey and the western sections. The extent to which the total may be increased is indicated in the fact that the Textile Machine Works, in Reading, is building an average of 80 machines a month and is sold up to March. This is confirmed in letters to manufacturers making inquiry as to new equipment and by a person authorized to speak for the company.

It appears from these statements that in seven months beginning with August there will have been delivered to American mills over 550 Reading machines alone. To these figures must be added a large installation of machines built in Germany. It is held that, figuring on normal increase in population and the continually lessened production of seamless hose, the full-fashioned industry even then will not be over-expanded, as, it is pointed out, considerable 39-gauge machines and coarser are being scrapped.

Much of the new installation is of 45-gauge, regarded as the more flexible, as in emergency, it is stated by a manufacturer, it can be made to knit a very near approach to 48, and when price is the desideratum, can compete with the better types of 42, that is, by packing the stocking with silk. It is noted that most of the 45-gauge mills are well engaged, most of them with orders from jobbers.

Plain Colors for Half-Hose Stronger.

Some trade factors harbor the suspicion that plain color half-hose for men soon will be pushing novelties toward the wall. A small but progressive jobbing house in the last six months sold over 4,000 dozens of 25-cent mercerized socks in various plain colors. This establishment is stocking fancies more conservatively than in the past and is confining selections to conservative patterns only. It places no duplicate orders for recent designs, and as fast as a number is sold up, samples are called in, bundled and sold over the counter to retailers at a 33 per cent discount. This practice, says an executive, "lets us out with a small margin of profit, whereas we had been taking a loss". Fresh patterns, fresh stock and maximum service, it is stated, enabled the concern to come through the first half of 1928 with an improvement in profits.

That manufacturers look for increasing sales of plain color silk half-hose seems indicated in the fact at least two in the last few months commenced producing full-fashioned lines. One of these is the Chipman Mill in Easton, Pa., the other in Philadelphia, and it is stated there is a disposi-

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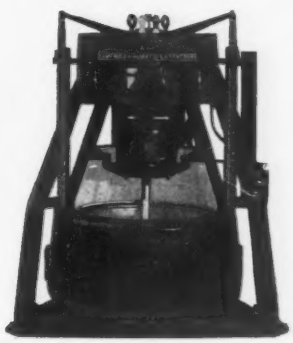

. . . with a basket as smooth as silk!

FOR extracting fine goods, the Humatic Hydro Extractor is furnished with a "silk finished" basket, as smooth as the finest silk. No roughening or pulling of fibres in hosiery, skeins or piece goods. This is but one of the many refinements found only in the Humatic. Write for details.

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These eight step, six color "Jacquard-like" patterns are produced by reverse plating and because of a new method of needle control,—floating threads are eliminated and positive operation assured.

Write for details regarding our simplified method of changing patterns like these and other information about Attachment 31.

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tion to divert to half-hose some machinery knitting women's 39-gauge. Mill reports show an increased production of full-fashioned silk socks in June, 1928, over the preceding month and over June, 1927, so that it would appear there is some ground for feeling just a bit uncertain of the present stage of popularity next year for novelties.

New patterns for Fall came out in August from several mills making fancies to sell at 35 and 50 cents a pair respectively, the latter of silk and rayon. These manufacturers maintain that while there may be a drift to plain color full-fashioned silk, the fancies will lead plain color seamless for some time to come. Comparing with a year ago, there has been quite a drop in output of seamless silk, which is not wholly offset by the gain in full-fashioned. Seamless silk-rayon and cotton-rayon are coming off in increasing quantities, and these are almost exclusively in combination colors. So there is the possibility the waning of fancies will be not so rapid as some interests affect to believe it will be.

The great bulk of the demand for novelty half-hose is for numbers to sell for 35 to 50 cents a pair, being pretty well distributed between the two. There is reported decreasing call for 75 cent and dollar socks, and it is noted that a leading mill selling to the retail trade found it expedient to shut down on operations for ten days or more in August. It is true also that manufacturers of popular price seamless numbers had slowed down, several being idle from one to two weeks, in the Reading district.

There is reported some interest in wool half-hose for Fall, in heathers, plain colors and rather dizzy patterns, in which respect wool socks will differ from year-around light weight novelties. Mills specializing in men's woolens report having taken a fair amount of business, mostly in the lighter weight goods, which are better adapted to present price notions of distributors. Besides, it is stated in the trade, heavy woolens are fast falling into disfavor, in step in this respect with modern underwear. Women's wool and wool mixture hose are far behind a year ago in sales, and traders see no prospect of it catching up, with women content to wear silk chiffons in winter without underhose.

Boys' Golf Hose Situation Quiet.

While there is promise of increasing distribution of boys' golf hose, there is seen the probability of overproduction of lines intended to sell for a half dollar a pair, for some time one of the more active hosiery items. An important mill which last year removed from Philadelphia to Acworth, Ga.—the Unique—is reported through the New York selling agents well taken care of in matter of orders. A northern mill which increased its production—the Penn's Valley—also is busily engaged and reported sold well ahead. Others might be mentioned as not so favorably situated, this being true also of several Pennsylvania manufacturers of children's lines generally. Shreve & Adams, Inc., one of the older New York selling agents for hosiery mills, recently took over the account of the Unique Knitting Co., the Acworth, Ga., mill, formerly selling through Neill & Haukap. This is regarded a strong combination of mill and agent.

Infants' socks, after having a fair spurt immediately following the opening for the next season, are seasonably quiet. A few mills making especially attractive 35 and 50 cent numbers have taken some business from leading

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jobbers, the rank and file of wholesalers playing the waiting game, as last year. The situation for manufacturers is better than in 1927, in comparative price stability, and the outlook is for a better volume of business and more nearly satisfactory prices for manufacturer and distributor. Buyers are expected to operate in force in September, for their earlier deliveries.

Underwear

How to maintain resale prices for branded and nationally advertised lines is one of the questions which have been puzzling manufacturers of underwear, those more particularly selling through wholesalers. The problem is receiving more than the usual attention, now that Spring lines for light weights for 1929 are being offered, and some mills have named lower prices than at the opening last year. This seems to have had the effect of causing jobbers to defer operating for a time, in the expectation still lower quotations may come out. Their attitude in this respect is more pronounced as a result of the action of cotton when the government estimate of the year's yield and the crop condition was announced, and what transpired on the day following, all of the gains of one day being more than lost on the following day.

Underwear jobbers selling well known brands sold heavily for retailer August special sales, at which values were sacrificed. For example, a line of nainsooks was selling in retail stores for less than the jobber price. It was used as a leader, and the loss was charged off to advertising, as is not uncommon. But the effect of these sales was to precipitate demoralization in competing lines, in certain territory, and with the consuming public being given opportunity to effect a substantial saving on purchases it was reasoned that store demand for the near future must decline.

Group buying is given as one explanation for instability of prices. This applies more especially to the unbranded, but the results extend to the nationally-advertised branded. In such lines there is an increasing tendency on the part of manufacturers to centralize distribution, a form of group selling. In line with this policy the Hampshire Underwear and Hosiery Co., makers of Otis underwear, recently appointed the Joel Bailey Davis Co. its sole distributor for a large territory of which Philadelphia is central. This eliminates five Philadelphia jobbers and leaves the Davis company with New York and Baltimore as its only nearby rivals, both credited with adhering to the policy of the Davis company in the matter of maintaining resale prices, in order that retailers may have some warrant for maintaining stocks.

Need for Different Distribution Discussed.

There had been heavy selling of Last Long underwear, one of the better known brands, retailers carrying fair stocks. Then quite recently, it was reported, an interior Pennsylvania jobber cut the price. This was the cause of no little disturbance in the retail trade, and is said to have given stimulus to the manufacturer proposal for distributing through selective large jobbers covering wide territory. In fact, one manufacturer goes so far as to suggest a master organization of mills in each of several distinctive lines—heavy weights, knitted light weights and rayon, for example—each to distribute through master organizations of mill agents or jobbers. How it might work out in general practice, with independent mills operating on the go-as-you-please plan, is a matter for conjecture. But, say manufacturers, a reformation in distribution is a crying need, and it seldom was presented more strongly than at the present, while jobbers are bucking the market and manufacturers are not well organized except in the matter of voting on resolutions at their periodical meetings, usually called ostensibly for indicating values and an opening date.

The opening of light weights was not productive of satisfactory results. Comparatively few buyers have operated. What business has been taken is not well distributed. Much of it was booked by manufacturers with certain fixed merchandising policies. Others appear to have gotten but a taste. The confused state of affairs as seen through the eyes of jobbers can be ascribed to style diversity. Shorts of knitted cotton and rayon, pieced out with knitted athletic shirts, have attained a degree of popularity that seems to be telling on union suits, both knitted and the cut-and-sewn woven. Jobbers must buy for 1929, but what will be the vogue next season is speculative, hence the probability they will buy very cautiously of whatever they decide upon as likely to prevail.

Men's heavy weight cotton ribs still are, to a great extent, being neglected, and some interests say they believe that no important developments are to be looked for until dealers feel the first pinch of Fall. Retailers are reported by the jobbing trade as slow with taking deliveries, giving jobbers no encouragement to place repeat orders. This seems to be the core of the situation as it is felt by manufacturers, among whom there is a general disposition to stand pat on current prices and either sell goods on a margin over cost or cut production to the bone, as some already have done, and leave it to distributors to pay the price or pay the penalty in lessened sales.

Women's Cottons are in Better Demand.

Contrary to wobbly conditions in men's knitted cotton underwear, manufacturers of womens' cottons are, for the most part, right well supplied with orders for medium weights, after a good season in light weights. Pennsylvania mills in Reading and Hamburg and neighboring small towns say their sales and shipments this year to date were in greater volume than for the corresponding period of 1927, notwithstanding the reported gains for rayon vests and bloomers. Production of women's rayon lines fell off rather sharply in July and August, and retailers say sales have not been as satisfactory as a year ago. But retailers seem to give preference to silk underthings, apparently not pushing either cotton or rayon.

Sweaters.

The lull in sweaters has continued longer than even the more conservative elements in the trade looked for. Price cutting has had a demoralizing effect on shakers, and it appears that manufacturers with an eye single to prices at which jobbers will buy are faring far worse than those who maintain standards and price. Sports coats are the more active item, and there has been a fair amount of business taken in novelties brought out recently for fall. A comparatively few mills are operating to capacity, numbers being sadly in need of business. But with yarns pretty well stabilized, and the production season narrowing to a very few months, the trade is sanguine of a material brightening. The bathing suit trade looks for volume buying following the opening in September, as stocks were reduced to almost nill during the long heated term.